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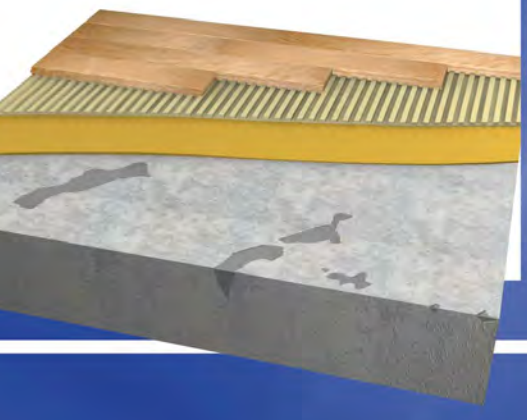

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LETTER *From The Editor-In-Chief*

A friend of mine was recently ripped off by an unscrupulous contractor who essentially took the money and ran without completing his end of the deal. My friend failed to do her homework regarding the contractor's background, and now the likelihood of recovering her money is pretty slim.

My friend learned a lesson: You should always conduct a background check on prospective contractors. Not only will you need trust them to work on your home, but you'll often have to trust them *inside* your home. Get references of past homeowners they claim to have worked for, and follow up those references with phone calls. If you can't verify the name, physical address, telephone number or credentials of the remodeler, then avoid him (or her) at all costs. Those are signs you may be dealing with a shady character, or at the very least, an unprofessional one.

Some other red flags include a remodeler who tries to pressure you into signing a contract, or one who offers a "special, low rate" or an exclusive one-time offer if you sign the contract "today." And never, ever pay for the entire job in advance.

Make sure to check the contractor's insurance and license, and make sure everything is up-to-date and valid. Your contractor should also be patient, exhibit strong communication skills and remain accessible. If the person in question doesn't measure up, you may very well regret hiring them.

In case you're wondering, "How do I know if the remodeler is patient and communicative before I hire them?" You're best bet is to thoroughly interview anyone you plan to hire to work on your home. Be nosy and be assertive. Furthermore, the contractor should inform you of your right to cancel the contract within three days. According to the National Association of the Remodeling Industry, notification in writing of your Right of Recision is required by law. This grace period allows you to change your mind and declare the contract null and void, and extending this notice to you is a sign that your contractor is conscious of professional ethics.

Don't get me wrong; most remodelers are skilled and responsible individuals, but in any line of work you're apt to find a few bad eggs. So, when hiring work for your next remodeling job, keep your eyes open and do the legwork to make sure your contractor is on the up-and-up. It's the only way to avoid unethical builders and to protect against home-improvement fraud.

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Q&A Got a ?

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Q: *How do I unclog a tub drain and trap? I've tried plunging and using chemicals, and nothing has worked. Now I'm trying a plumbing snake, but when I try to push it down the tub drain, the bends in the pipe are too sharp for the snake to go through.*

A: Try removing the overflow plate or drain lever, usually located beneath the faucet, and inserting the snake directly into the overflow pipe and down into the drain and trap. That gives the auger a more direct route to the drain without all the sharp bends in the pipe.

Q: *My son has plastered his car with bumper stickers and has decided that he now wants to sell it—with my help. Is there an easy way to get these things off without damaging the paint?*

A: Try spraying the stickers with a lubricant like WD40 or Jigaloo. Allow the solvent to work for a couple of minutes and then try to peel off the stickers. If that doesn't work, use a hair dryer to heat the stickers. The heat should soften the adhesive, making the sticker easy to peel off. Start at one corner and pull slowly. If necessary, gently scrape the sticker with a rubber spatula. Wipe away any stubborn adhesive from beneath the sticker with a soft rag and rubbing alcohol. Then buff the car with a polishing compound and apply a new coat of wax.

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Q: *I live in an old home that has the original single-pane windows, and in winter all the warm, conditioned air seems to leak out. I know I need replacement windows but can't afford a big project right now. Is there anything else I can do to help insulate them?*

A: In the colder seasons, you might try using a product called temporary caulk, which is available from both Red Devil and DAP. Use it to caulk your windows shut in the same way that you normally apply caulk. The benefit of temporary caulk is that when the weather warms up, you can peel off the product and use the window normally. Some heavy drapes might also help with some degree of insulation, but single-pane windows will always transmit a lot of heat, and in the long run you should consider a double-pane replacement or the addition of storm windows.

Q: *I have a leaking bathtub spout. The knobs both tighten when I close them off, but a small amount of water still trickles out. How can I repair this?*

A: Check the underside of the spout for moisture. If it is dry, then the threads on the inside of the spout may not be tight enough. Take off the spout, wrap Teflon tape around the threads and then reattach the spout. See if that works. If the underside of the tap is wet or you see signs of corrosion under the spout, then the spout may have rust damage and require replacement. **EHT**

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Think Green this Spring

Cordless lawn tools are low-maintenance, ***environmentally friendly alternatives*** to gas-powered equipment.

Black & Decker's new 36V String Trimmer

By Matt Weber

In the era of global warming, many consumers are focusing on new ways to accomplish yard work while lowering its impact on the environment. According to the U.S. Environmental Protecton Agency, a gas-powered lawnmower pollutes as much in one hour as driving an automobile for more than 20 miles. With more than 30 million lawnmowers in the United States, that can accumulate into a great amount of pollution. As a matter of fact, gasoline-powered landscape equipment (mowers, trimmers, blowers, chainsaws) account for more than 5 percent of our urban air pollution.

However, battery-powered equipment generates none of the carbon dioxide or other emissions associated with gas. Plus, aside from the environmental benefits, electric equipment of all types has a lot to offer. You'll be troubled with much less maintenance from electric units, and you can say goodbye to those stubborn pull-start cords that never seem to cooperate. Plus, electric equipment is quiet; the mowers are usually 75-percent quieter than gas units. And thanks to some major strides in engineering and battery technology, a few of the latest tools to hit the stores are boasting enough power to rival their gas-driven counterparts.

In fact, one Colorado-based lawn care service is applying the environmentally friendly "green" initiative to its business model. Clean Air Lawn Care, Inc., provides lawn services that are entirely carbon neutral. Clean Air Lawn Care actually uses biodiesel in all its riding mowers, but the rest of its lawn equipment is electric and manufactured by Black and Decker.

"We use their lawnmowers, string trimmers, hedge trimmers and edgers for their strong environmental performance," says company founder, Kelly Giard, of the Black and Decker equipment. "There are no pull cords. No trips to the gas station. No gas or oil to mix. No gas to store or spill. No fumes. No tune-ups or maintenance. And more importantly—no emissions in your yard."

MOWING WITH BATTERY POWER

Of course, protecting the environment is great, but we all want performance from our tools as well. There's no argument that a gas-powered lawnmower can outperform batteried unit, but are the units even comparable? Because nobody wants a gross sacrifice in performance.

The truth is that battery-powered lawnmowers are only appropriate for yards less than 1/3 acre. It takes a lot of power to run a mower, and the batteries simply don't have the stamina for larger yards. Also, the cutting swaths of most of these units are narrow, which reduces the rate of cutting production when

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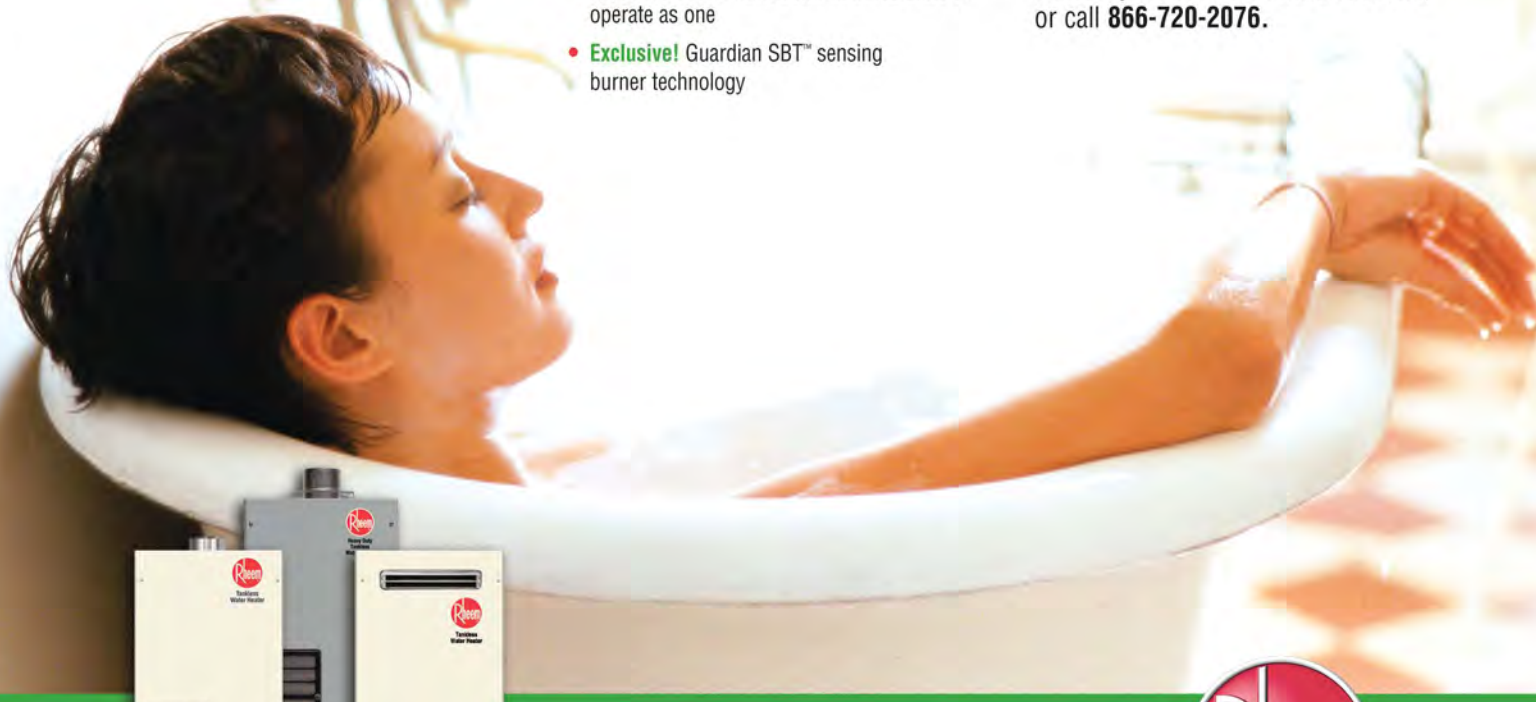

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compared to the larger gas units. You can also expect to mow more frequently, as most eletcric mowers struggle with very tall grass, so the lawn must be kept to a manageable height.

Battery-powered lawn mowers are available from a variety of manufacturers. Black and Decker currently offers a 24-volt cordless mulching mower. DR Power Equipment will soon introduce two new 36-volt models, with a 14- and 19-inch cutting swath, respectively. DR's new Neuton mowers can be charged on less than 10 cents worth of electricity, and a single charge can cut one third of an acre.

For this article, the *EHT* staff tested the new Craftsman 37048 Cordless Mower, a 48-volt model that can cut small yards on a single charge with a run time of about 45 minutes. The mower has a 19-inch deck with three-in-one functionality, meaning it can bag, discharge or mulch the grass clippings. The large 7-inch front and 8-inch rear wheels make the mower easy to maneuver over the lawn, and you can easily adjust the cutting height with a single lever. The mower has a fold-down handle for easy storage, and an accessory grass-collection bag is included in the box.

The mower's 48-volt battery generates plenty of power for the blades to slice through the grass of the soccer field that served as our testing grounds. It may not have quite enough muscle for bush-hogging, but lawns appear to be no problem, and the new Craftsman performed very well in power and maneuverability.

When shopping for your next mower, consider one more advantage of electrical units—they're very economical to use. Electric mowers cost less to purchase than high-end gas mowers, and they cost only pennies to use each time. The typical electric mower uses about $3 in electricity each year.

Craftsman's new 48V mower is available at Sears.

CAN BATTERY RIVAL GAS?

At this time, there are very few pieces of lawn equipment that can cut through vegetation with the vigor of a gas-driven engine. When compared to gas models, battery units have traditionally lacked power and stamina. However, in addition to the Craftsman mower, a new tool from Black and Decker impressed us, and gave renewed hope for the future of battery-powered lawn care. The most powerful battery string trimmer we've seen is easily the new Black and Decker 36-volt model. Our staff was skeptical at the company's claim that the new unit rivaled gas trimmers. But after charging it overnight, we put it to use … and this thing can really hum.

With a lot more power than any electric trimmer we've used in the past, the trimmer's large cutting head spun with enough strength and velocity to cut hungrily through clumps of vines and weeds still lingering from last fall. The large Ni-Cad battery that is housed in the upper portion

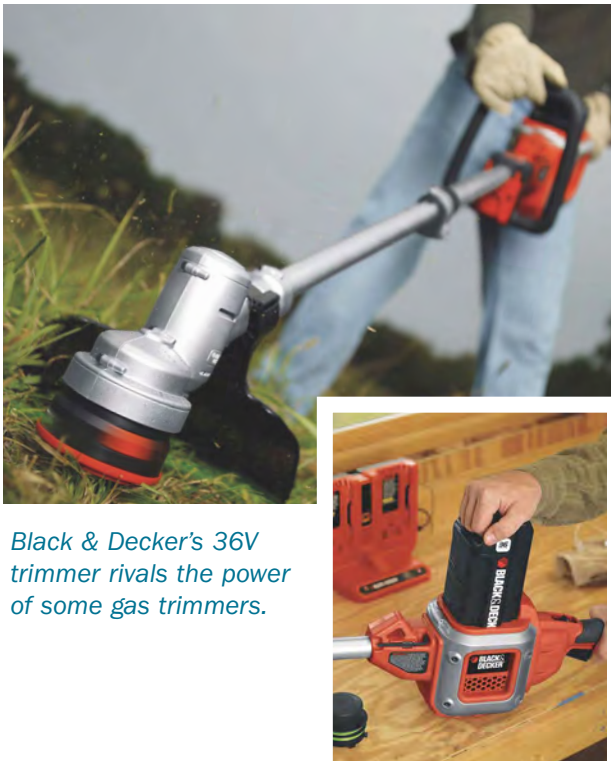
According to the manufacturer, DR's new Neuton mowers can be charged on less than 10 cents worth of electricity.

nicely balances the motor and cutting head at the other end for a tool that's easy to handle. It took care of everything around the house without once struggling against thick, accumulated brush the way so many battery-op trimmers have done in the past. And it still had battery power to spare when the yard was completed. The trimmer features a long shaft, sturdy construction and an adjustable handle. We haven't had the tool long enough to see how it stands up to a full summer of usage, but our initial tests suggest the Black and Decker 36-volt trimmer is the battery-powered unit to beat this year.

MORE FROM B&D

Black and Decker offers a few more notable battery-powered tools to keep your yard neat and orderly. The company's 18-volt, 22-inch HedgeHog hedge trimmer cuts branches up to 3/4-inch thick. It's designed to trim up to 1,200 square feet per charge, with run time up to 30 minutes.

Black and Decker's Cordless Broom is a compact but powerful 18-volt blower that's ready to clear away leaves and debris without the hassle of dragging out an extension cord and strewing it over your driveway. It's designed to sweep hard surfaces on most 1/2-acre properties, so it's great for patios and walks.



Black & Decker's 36V trimmer rivals the power of some gas trimmers.

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And Black and Decker's 18-volt cultivator with telescoping shaft can spare the hobby gardener some time spent bent over the flower bed. While it doesn't have quite the muscle for breaking hard, compacted ground or serious agricultural jobs, its counter-oscillating tines can effectively weed and aerate the topsoil in flower and herb gardens, and the user doesn't have to crouch over the dirt.

ROBOT MOWERS

Admittedly, when a LawnBott showed up at the *EHT* office for a test run, we didn't expect much. After all, it was an electric, unmanned, grass-cutting "robot," and we were partial to gas-powered riders. But we were happy to find that the LawnBott works well as a kind of maintenance drone. It requires no gas or oil, so it's eco-friendly with no emissions. The Evolution LawnBott that we tested mows with only a

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The Lawnbott mows the grass on a customizable preset schedule.

12-inch cutting swath, so if you measure the lawn in acres you should look for a more high-productive mower. But for small, flat lawns, the programmable LawnBott can be set for up to three zones to mow grass up to 3 to 4 hours per session on a weekly or as-needed basis. The mower also uses a flat blade to mulch the grass clippings, which fertilizes the lawn as it cuts. And, the LawnBott is quiet enough to program cutting times for late night or early morning without disturbing the neighbors.

One issue of note is that the lawn must first be mowed with a regular lawnmower before using the LawnBott, which scans around the lawn to maintain the cut grass at a consistent height. When the robot detects an area of high grass, it travels in a spiral pattern to focus the cutting in that particular area.

The LawnBott comes with everything you need: a docking station to be placed near an electrical outlet; a wire and plastic nails to rope off the perimeter

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of the mowing zone; a recharger and a transmitter. With the system in place, the LawnBott leaves its docking station at a programmed time, zigzags inside the wire perimeter in search of tall grass, and then returns to recharge either when it's done mowing or when the battery runs low. According to the manufacturer, the robot can mow 33,000 square feet and navigate slopes up to 27 degrees, and it uses only $7 to $10 worth of electricity per year.

REDISCOVERING THE REEL MOWER

The first reel mowers were invented in the 19th century primarily to cut the lawn on sports grounds and expensive gardens as an alternative to the scythe. The blades were configured in a drum shape to spin along with the mower's wheels. That basic concept has been redesigned with the Mantis Razorcut 38. What looks like an old-school mower performs far and beyond the reel mowers of yesterday, and after digging around the Internet we discovered this model in particular is already popular in the United Kingdom.

One key feature is the mower's contact-free blade system. The blade misses the bed knife by less than a millimeter, while still making a super-clean

The Mantis Razorcut is easy to use and leaves a neat, finished lawn. Although, the included grass catcher didn't seem to fit our test unit.

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scissor cut. The loss of friction from the no-contact cutting makes pushing the Razorcut easier than most gas-powered walk-behinds. In fact, when you stop pushing the mower forward, the blades will still continue to spin. Plus, the clean cutting action of the five blades shears the grass rather than tearing it, which gives the lawn a clean, crisp finish in a 38-centimeter (15-inch) cutting swath. This type of sheared cut yields a greener and healthier lawn, preferred by lawn care professionals.

The Razorcut reel mower is a push-type device but it weighs less than 17 pounds—significantly lighter than gas-powered walk-behinds, and more maneuverable than many gas models. If you run into an obstruction, just lift the mower right over it … try that with a gas unit. Other features include adjustable cutting height from 14 to 45 millimeters (0.55 to 1.77 inches); flame-hardened, powder-coated steel blades; sealed ball bearings and a rear spoiler that ejects clippings from the rear. There's also an accessory grass catcher available. The grass catcher of our test unit was wide enough for the mower, but it didn't seem to attach to the rear of the unit as the instructions described. We suspect the catcher was intended for a different model mower, but I'm sure Mantis will soon iron out that kink.

One minor drawback is that when the Razorcut is pulled backward, there's no cutting action. That isn't an issue when cutting in a spiral or zigzag pattern, but it makes the back-and-forth trimming around trees a little more work. The mower is intended for lawns less than 250 square meters (820 square feet), and as with any non-gas unit, you will need to mow more frequently than with a gas unit. But if you're not afraid of a little exercise, the Razorcut mower presents a clean, "green," no-fuss way to keep small yards looking sharp. EHT

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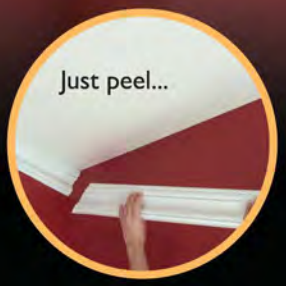

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Build a Carpenter's Box

A Handy Way to Tote Your Tools

In days past, tradesmen carried their tools to the job site in hand-made wooden boxes. A carpenter's tool box is still a great way of toting a number of tools. The box shown holds a variety of hand tools, plus a small cordless drill/driver.

By Monte Burch

In days past, most carpentry and trim or finish work was done with hand tools, and carpenter's carried their tools to the site in a handmade wooden box. My dad, a finish carpenter who specialized in trim work and cabinetry, had several boxes with a variety of tools—one box for his planes alone. These days a great deal of carpentry and trim work is done with power tools, but a toolbox of selected hand tools is still invaluable. A toolbox also makes a great organized place to safely store your tools in the shop, as well as tote them to the job.

The box shown is a compilation of several boxes I've built, some from teaching 4-H woodworking, as well as some ideas from a few of Dad's boxes. The box shown is made of white pine to keep the weight down. If it's to be a workshop box, you might prefer to make it of a finer hardwood. The box shown is also fairly simple to build, but you could use hand-cut dovetail joints and other construction as a showcase for your work. The box is sized to hold a framing or carpenter's square as well as a 2-foot level and a variety of tools.

CONSTRUCTION

First step in construction is to enlarge the squared drawing on page 30 and create a pattern for the ends. Using a saber saw or band saw, cut the ends to shape. Note the sides are notched into the ends. Sand the cut edges smooth. Cut the top divider piece to width and length. Note it is 3/16-inch less the width of the end pieces. Fasten it in place between the two ends with screws or finish nails. The divider fits flush with the front of the tool box, leaving an open space in the back to allow for a framing square to slide down into. Cut the bottom and fasten in place with screws or finish nails. Then cut the back piece and fasten it in place. Cut the upper front piece and fasten in place.

The top divider piece has holding strips for several tools. This includes a strip fastened to the back edge, then a second strip set slightly over the thickness of the 2-foot level it's intended to hold.

An Irwin Dovetail/Jamb saw is held in place in the front with a holding strip. This little saw is great for trimming jambs and other tight places. Install a pair of 1-1/2-by-1-1/2-inch blocks between the last holding strip for the level, and the inside edge of the jamb saw support strip. These have slots cut in their top edges to hold a pair of hand saws upright. The handle is a

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- 4" dust hood
- Approx. shipping weight: 240 lbs.

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piece of 1-by-1, ripped from a 2-by-4, with its edges rounded with a router. Install with glue and screws through each end into the handle ends.

Bore holes in the back top edge to hold screwdrivers, nail sets, punches and other tools. Additional tool holders are built into the ends of the box. One end has a 3/4-inch piece with holes bored in it to hold paddle bits and pencils.

The opposite end has a chisel holder for wood chisels. This is constructed of 1/2-inch thick

Cut the ends to shape on a bandsaw.

Then sand the cut ends smooth.

materials. Cut the front piece and lay it on a work table and then cut 1/2-by-1/2-inch spacers to go between the chisels. Position the chisels in place and glue the spacers to the back side of the front board and between the chisels with hot-melt glue. Add a 1/2-inch bottom to the holder, then fasten the holder to the toolbox end with screws or finish nails. Spaces between the saws and level holding strip can hold a number of other tools, including measuring tools, a stud finder and so forth.

The drawer front overlaps the end tool holders and the tool box bottom. Cut the 3/4-inch drawer front to size, but it has a dado to hold the bottom, so 3/4-by-3/4-inch end blocks are fastened to the ends to conceal the dado. Cut the 1/2-inch drawer side pieces to size. The drawer bottom is cut from 1/4-inch hardboard and held in place in the front and sides with dadoes. These are cut using a table saw with the blade set 1/4-inch high. Make a cut, move the fence slightly, make another cut and continue moving and cutting until you have a dado slightly over 1/4-inch wide.

Fasten the sides to the front with glue and finish nails. Cut the back and fasten between the sides with glue and finish nails. Install the bottom in the dadoes. Use a carpenter's square to make sure the drawer is square, and then fasten the bottom down on the bottom edges of the back with small flat-head nails. The drawer is held in place with a pair of wooden turn buttons. Set the finish nails below the wood

Assemble the box with glue, screws and countersunk finish nails.

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surface; fill with wood putty and sand smooth. Finish the tool box as desired. I left mine unfinished to age naturally. Now comes the fun of filling your new carpenter's box.

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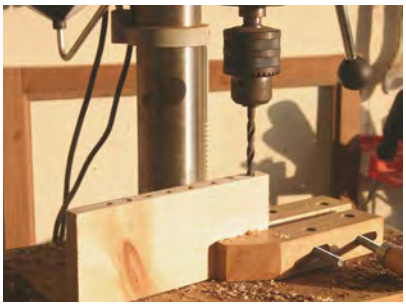


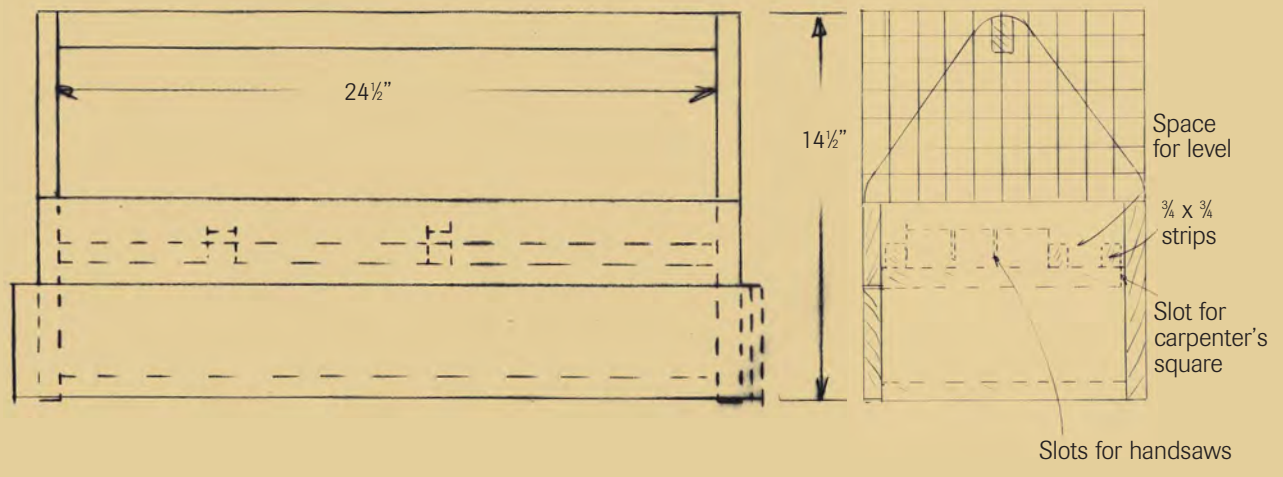
Holes for the paddle bit holder are bored on a drill press. A wood clamp holds the stock upright.

Wood chisels are held in a holder of 1/2" stock. Glue the spacers between the chisels to the front of the holder with hot-melt glue.

Assemble the drawer. The bottom is held in dadoes in the front and sides, and fastened down to the bottom edge of the back with flat-head nails. Make sure the drawer is assembled square.

MATERIALS LIST

Ends, 3/4 x 10 x 14-1/2", 2 req'd.
Top Divider, 3/4 x 8 5/16 by 24-1/4", 1 req'd.
Bottom, 3/4 x 8 1/2 x 24-1/4", 1 req'd.
Back, 3/4 x 7-1/2 x 25-3/4", 1 req'd.
Front, 3/4 x 3 x 25-3/4", 1 req'd.
Handle, 1 x 1 x 24-1/4", 1 req'd.
Paddle Bit Holder, 3/4 x 4 x 9-1/4", 1 req'd.
Chisel Holder Front, 1/2 x 4 x 9-1/4", 1 req'd.
Chisel Holder Dividers, 1/2 x 1/2, x 4", 5 req'd.
Chisel Holder End Block, 1/2 x 2 x 4", 1 req'd.
Drawer Front, 3/4 x 4-1/2 x 26", 1 req'd.
Drawer Front End Blocks, 3/4 x 3/4 x 4-1/2", 2 req'd.
Drawer Sides, 1/2 x 3-1/2 x 7-3/4", 2 req'd.
Drawer Back, 1/2 x 3-1/2 x 22-7/8", 1 req'd.
Drawer Bottom, 1/4" hardboard x 3-3/4 x 23-3/8", 1 req'd.
Drawer Turn Buttons, 1/2 x 1/2 x 3", 2 req'd.



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New deck materials balance aesthetics and "green" building with low maintenance and long-lasting performance.

NEXT-GEN

By Matt Weber

Building an outdoor sun deck is one of the most popular DIY projects, providing a breezy outdoor retreat that adds to the overall value and décor of the home. The materials that cover these decks, whether real wood or composite, are ever evolving due to a growing demand for durability, low maintenance, and a desire to lower the environmental impact. Easy installation is another key factor, for the time-conscious contractor as well as the weekend warrior. Here's a look at some of the latest materials and how they can impact your next project.

NEW RECIPES FOR DECK BOARDS

Composite decking is no longer the new kid on the block. Well established as a low-maintenance alternative to wood, composite decking resists rot, insect infestation, warping and splintering. However, not all composites are

Advances in wood preservation, new prefinishing options and breakthrough composite materials are making new decks more resilient than ever. Photo courtesy CedarOne by Weyerhaueser

DECKS

created equal. Usually made from a combination of plastic and wood or other cellulose material, the ingredients of the deck boards play a major role in performance. For example, olefin is an oil-based plastic product usually derived from recycled goods. Although it benefits the environment to recycle these materials, a higher quality plastic for composite decking is vinyl or PVC, which is a harder material for a longer lifespan before requiring maintenance.

One new trend in composite decking is to eliminate wood from the equation. For example, Timbertech has a new line of deck boards dubbed XLM. Timbertech XLM is manufactured as a durable-expanded cellular PVC material that features a blend of mineral enhancements to reinforce its structural integrity. Billed as an "extremely low-maintenance alternative decking solution," the manufacturer touts the product as providing unparalleled scratch and stain resistance. Can it be scratched? Sure—take a knife to it and you can scratch anything. But the samples our staff tested proved very durable and scratch-resistant under normal wear-and-tear conditions—much more so than lumber or typical composites. Foot traffic, dog claws or lawn furniture isn't likely to damage the surface. And because these new cellular PVC decking products contain no wood fibers, there's no source of food to attract mold or mildew, eliminating one of the most common problems associated with wood decks.

A similar concept is available in the new Azek Deck, which is also made completely of cellular PVC. The Azek Deck boards come in five fade-resistant colors, and like the XLM boards, they offer excellent resistance to scratches and staining.

The benefits don't end there. Not only do these PVC deck products offer a handsome wood

TimberTech's new XLM boards are made of cellular PVC for exceptional stain and scratch resitance and minimal maintenance requirements.

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grain texture, but the boards are 30- to 40-percent lighter than the typical wood-plastic composite planks. That's a significant difference if you're installing the boards yourself. Further easing the installation headaches, these products require no pre-drilling for the deck fasteners, unlike typical wood-composites. You can even countersink screws without risk of splitting or distorting the deck surface, saving lots of time and effort.

Cellular PVC boards, such as the Azek Deck boards shown, are significantly lighter than wood-plastic composites, and they require no predrilling during installation. You can even countersink the screws without risk of distorting the board surface.

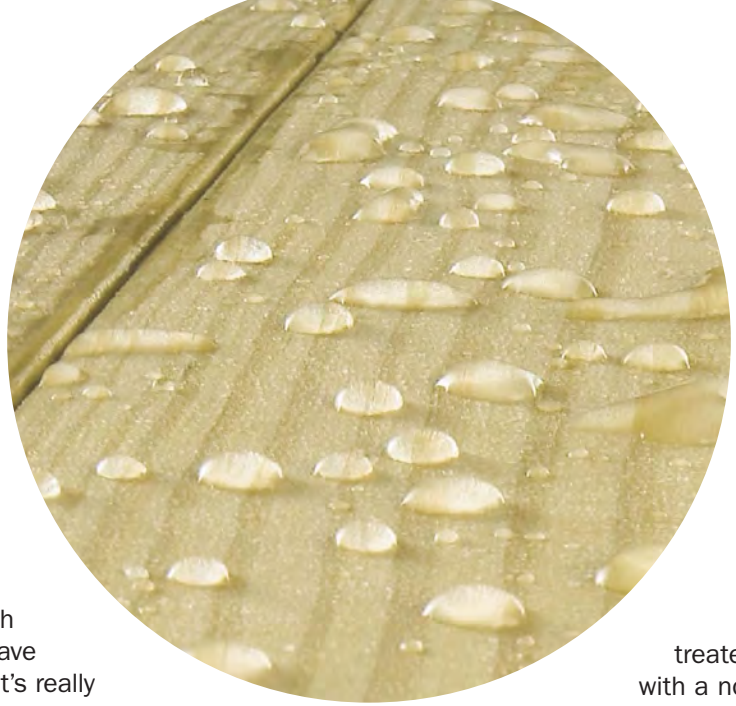
ADVANCES IN CEDAR

The many benefits of Western Red Cedar as a decking material are what make it so popular for outdoor structures. Cedar is easy to work with, and the natural preservatives in the wood fiber help it withstand insects and harsh weather conditions. When properly installed under normal conditions, cedar deck boards lie flat and straight and resist splintering. Cedar also stays cooler than many other materials. And in the era of "green" building, Western Red Cedar is a carbon neutral material, while non-wood materials produce considerable amounts of carbon during their extraction and production.

Probably the most important trend in cedar decking has been toward factory finishing. Factory finishing coats all sides, edges and the cut ends of every board. As Kevin Leary, president of WFP Cedar explains, using a machine to apply the finish works it into the surface under controlled conditions, which ensures the boards are uniformly coated. This consistent coating process increases the boards' longevity and overall resistance to moisture. This way, you simply choose the preferred finish color and install. Plus, the cost of pre-stained cedar boards is about half the cost of hiring a contractor to paint or stain them on the job.

However, pre-finished cedar decking is a fairly new product, so it may be difficult to find in

The latest advance in cedar decking is the trend toward prefinished boards, which ensures the decking is uniformly coated with stain and preservative. Photo courtesy CedarOne by Weyerhaueser



New technology in wood preservatives eliminates metal from the treatment process, and special wood stabilizers help protect against weathering. Photo courtesy Viance

your area. Leary notes, “Since decks are often small structures, the amount of material required often doesn’t justify the freight charge if it has to be shipped. But if you can find a local dealer, then building a deck with pre-stained cedar can save time, effort and money. It’s really an excellent product.”

BREAKTHROUGH TECHNOLOGY IN WOOD PRESERVATIVE

Treated wood is the most widely used material for decks throughout North America, and new developments in the treatment process are making some products more durable than ever.

Previous types of treated wood, such as lumber products marked with ACQ or C-A, indicating the chemicals used in treatment, depended on copper or other metals as the preservative. The high copper content of these products leads to fast corrosion of standard fasteners. Builders must use approved hot-dipped galvanized, stainless or coated fasteners with these products to avoid rusting. But there are other problems, too, such as when the copper reacts with metal hangers and lag bolts. In fact, with an ACQ or C-A product, metal hangers should actually be insulated from the wood with a peel-and-stick product to minimize direct wood-to-metal contact. To mount lag bolts through copper-treated wood, some professionals drill the lag hole about 1/8-inch larger than the bolt so the cavity can be filled with epoxy to coat and protect the bolt from the copper in the wood. These extra steps can add up to a lot of work.

In response, Arch Wood Protection recently introduced the first residential pressure-treated wood to be protected with a non-metallic preservative. For use on decks, fence boards, railings, trim, molding and other out-of-ground applications, Wolmanized L3 Outdoor Wood has a treatment formulation developed for low impact on metal hardware, coatings, woodworking equipment and the environment. The L3 Outdoor Wood

is protected by an EPA-registered carbon-based preservative called PTI—that's propaconazole tebuconazole imidacloprid, in case you're taking notes. Because it has no copper, there is a no galvanic reaction with other metals, which means it's no more corrosive to metal than untreated wood and can be used in contact with aluminum. The result is also less wear on saw blades and other equipment, and it's ready to be painted. Plus, the Southern pine wood has a built-in Stabilyzer™ additive to minimize moisture damage.

A similar concept in wood treatment comes from Viance, which offers the Ecolife brand of stabilized weather-resistant wood. Ideal for decks and other above-ground outdoor projects, Ecolife is comprised of a non-metallic, carbon-based preservative plus wood-stabilizing polymer

The presence of copper in traditional treated wood causes corrosion in standard fasteners. However, the new decking materials from Arch Wood Protection and Viance use no copper in the treatment process.

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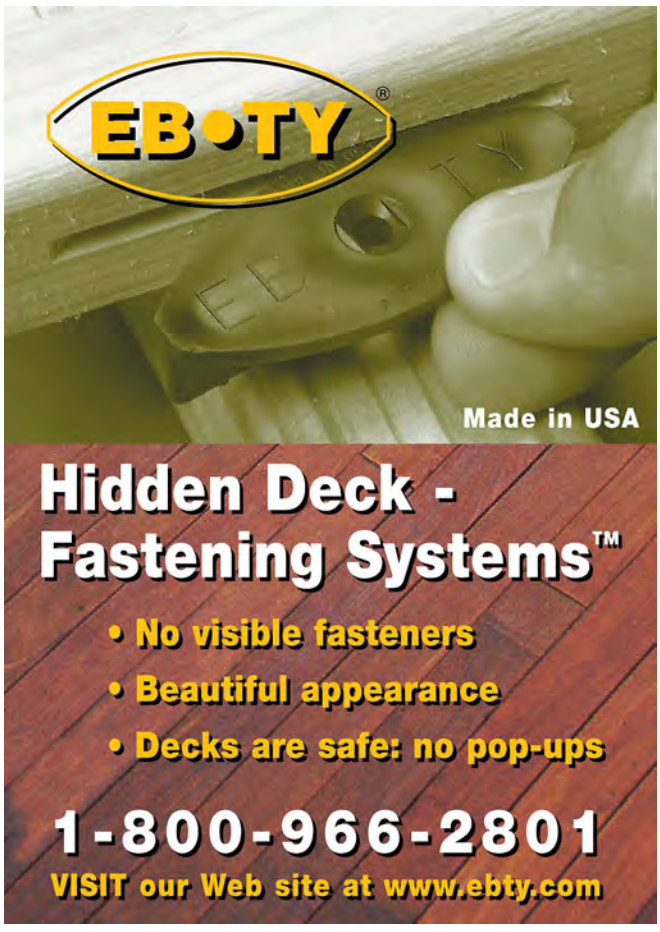
system that offers the natural beauty of real wood combined with advanced weather protection and fastener performance. The Ecolife treatment also provides protection against decay and termites. And according to the manufacturer, results from accelerated weathering tests simulating two years of Florida weathering show that the stabilizer in Ecolife reduces cracking and splitting by approximately 90 percent compared to traditional treated wood.

"Ecolife Wood with new EcoVance Preservative is an industry breakthrough that provides superior performance and environmental benefits compared to other types of treated wood," says Steve Ainscough, president of Viance. "This technology truly is the next generation of wood preservation."

According to the manufacturer, the stabilizer in Ecolife Wood reduces cracking and splitting by 90 percent when compared to traditional treated wood.



NEXT-GEN DECKS

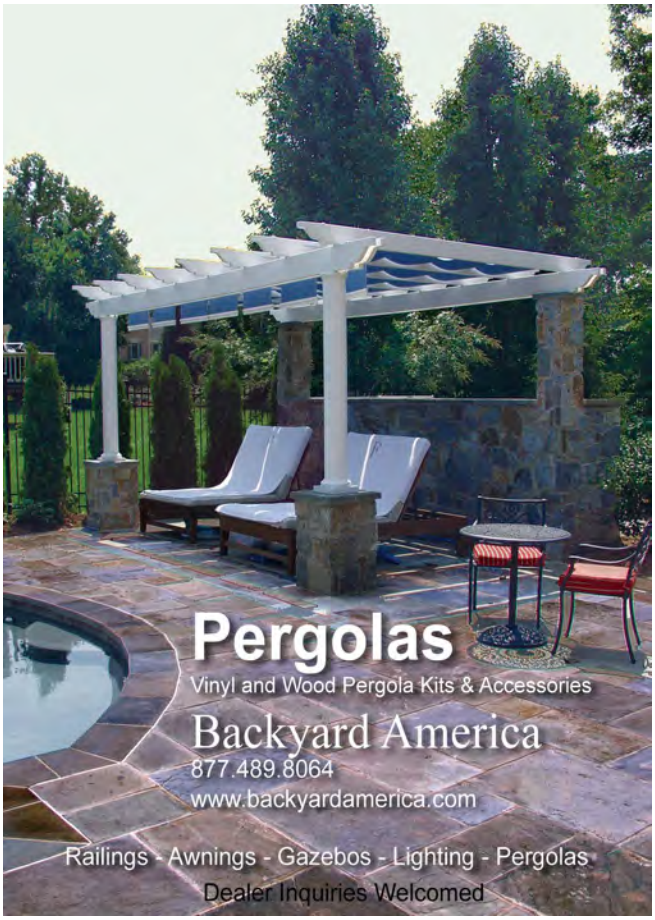
Ecolife will soon be available in a variety of species including southern yellow pine, radiata pine, ponderosa pine, red pine, western hemlock and Douglas fir.

Both the Wolmanized L3 Outdoor Wood and the Ecolife products are backed by a lifetime limited warranty in most residential and agricultural uses, and each can be used in environmentally sensitive settings.

WOOD DECKING THROUGH STEAM AND HEAT TREATMENT

One material that's new to the U.S. market is called PureWood. This is real wood decking that is treated with a mixture of heat and steam to change the structure of the wood so it no longer serves as a food source for mold or rot. Bay Tree Technologies USA, which brings PureWood to the States, offers a 25-year warranty against rot and decay. And according to the manufacturer,

The new copper-free treatment options from Arch Wood Protection and Viance result in less wear on saw blades and other equipment. Photo courtesy Southern Pine Council



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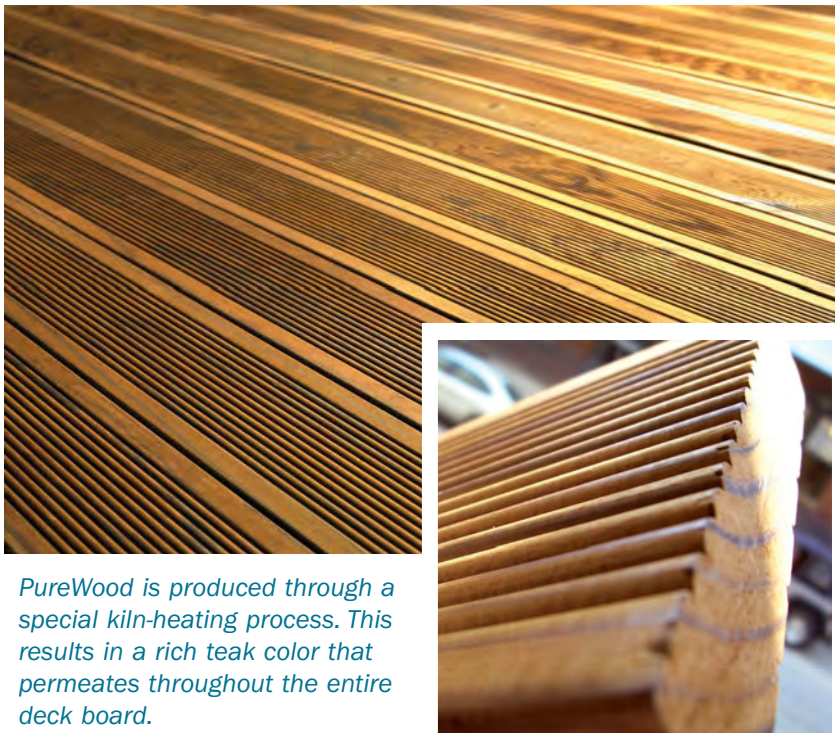
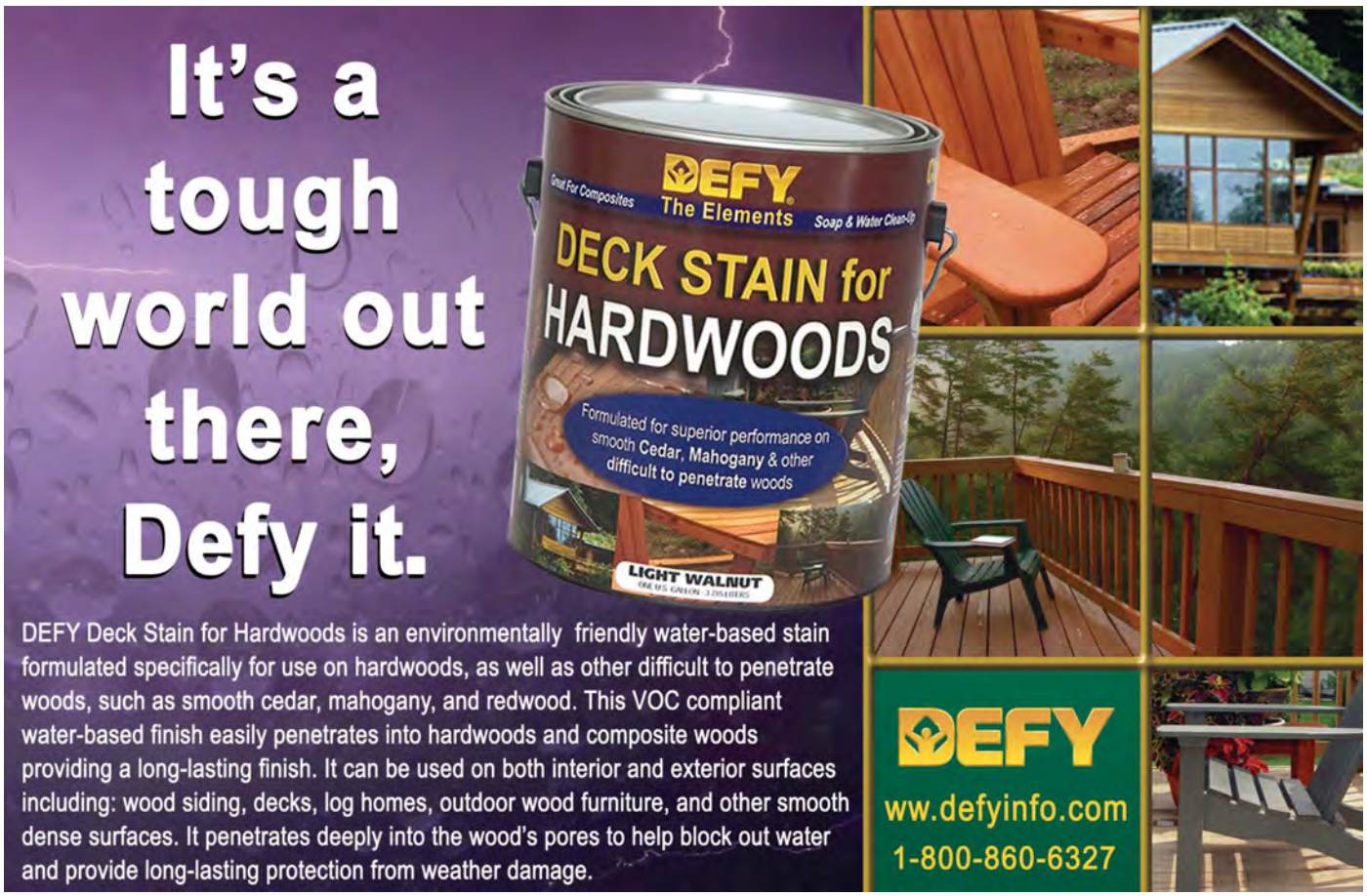
the treating process, developed in Finland and called Thermally Modified Wood (TMW), results in a much more dimensionally stable product than standard pressure-treating processes.

"We're talking about 80 percent less shrinking and swelling with this product," says Bill Schwam, vice president of sales for Bay Tree Technologies. "And the environmentalists love it, because we use such a readily renewable material to produce our decking." PureWood is created by kiln-heating Southern yellow pine to about 500 degrees in a special process that displaces the oxygen in the air with steam and heat. This special conditioning burns the wood sugars into a substance that can't be digested by mold spores or other pests,



PureWood is produced through a special kiln-heating process. This results in a rich teak color that permeates throughout the entire deck board.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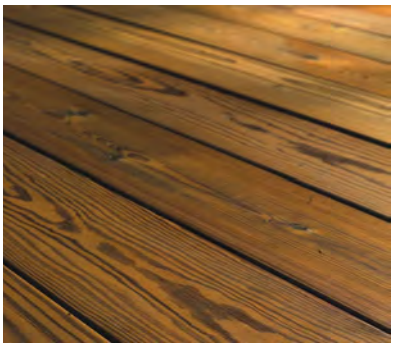
like termites. And because of the reduced moisture rates, the wood is much more durable.

"It's been known for thousands of years, the benefits heat can bring to wood," says Schwam. "The Chinese and Japanese used to heat their arrows over a flame to harden the wood. We're focusing the process on decking. We have thermally modified boards that have been exposed to weather for ten years, and when you cut them there are no signs of splitting or checking." However, the boards should be predrilled before installing fasteners.

Another side-effect of the heating process is that the wood develops a rich, handsome teak color that penetrates throughout the board. Scheduled to first be distributed in North America in the spring of 2008, PureWood will be introduced in two distinct styles: Sahara and Linea. Sahara is a traditional-style deck board with eased edges in a natural wood-grain. Linea is a Euro-style decking with a different linear design on each side. Each style is suitable for above and

Purewood is available in Euro-style Linea (above) and a traditional wood grain texture called Sahara (below).



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in-ground contact use and features PureWood's signature kiln-dried low moisture content. No chemicals or metals are used in the kiln process, and the result is a deck product that is 100-percent wood—and nothing else.

The decking will be available in a 1-1/4-by-5-inch board, and will be marketed as a premium product to compete with ipe, tigerwood and low-maintenance composites. PureWood will be distributed nationally, and you can expect pricing to compete around the mid-range of composite decking products.

WRAPPING UP

As you can see, there are some new things under the sun when it comes to decking materials. And with such stiff competition in the market, we can expect further advances to come down the pike. The next time we revisit this topic for a future edition of *Extreme How-To*, you can expect to see a brand new slate of decking options, stronger and more environmentally friendly than ever before. **EHT**

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INSTALLING A TILE PATTERN LAMINATE FLOOR

Retired art teacher Marsha Graham loves the southwestern look of the ceramic tile floors in her Arizona home and wanted something similar in her Oregon residence. However, she wasn't convinced that Oregon's wet and cold climate and tile floors would get along that well. That's how she settled on a laminate floor with a tile pattern.

In addition to being softer and warmer, the laminate floor would cost less, install faster, and maintain easier than the tile floor in her desert home. With a preference for making art over cleaning and sealing grout, Graham could look forward to years of easy care with her new floor.

Laminate flooring is made of several layers. At the core is the thickest layer, which is a high-density fiberboard. Under the core is a back layer that adds stability and acts as a moisture barrier, which is very important to prevent cupping.

Above the core is a pattern layer, which is essentially a photograph of almost any material you would use for a floor surface, usually hardwoods, stone or tile. Covering the pattern

By Larry Walton

SOFTER SOLUTION

layer is a protective wear layer, many of which incorporate aluminum oxide for added durability.

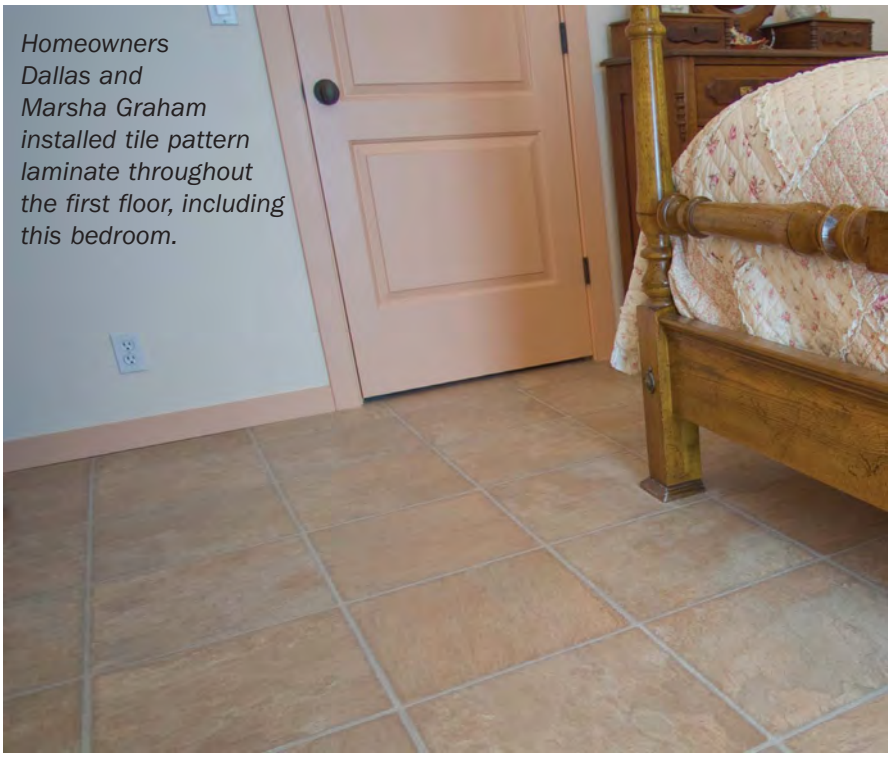
You can use standard wood cutting saws to cut laminate flooring, but the very things that make the newest flooring so tough are also hard on saw blades. Be prepared to sharpen or replace the blades when you are finished.

We used a portable table saw and our Dewalt 12-inch sliding compound miter saw (because it can reach all the way across the boards) to make most of our cuts. On both the table saw and the miter saw, the teeth enter the material from the top, which minimizes chipping. You can use your circular saw equipped with a carbide blade, but we recommend cutting from the back of the piece, especially if you have a net fit that will not be covered by base boards, such as against a shower stall or patio door.

Make sure the subfloor is flat and free of nail heads, has no sizable holes and is clean. Because laminate floors float (are not fastened directly to the sub floor), they tend to bridge over low areas, which can leave a sinking feeling when walking on these areas. It's best to get things flat within 3/16 inch or so over an area that can be tested with a 6-foot level.

Next, roll out an approved foam pad underlayment. This padding acts as a vapor barrier, smooths out minor subfloor imperfections, insulates and dampens noise.

In the end, it doesn't matter which direction tile pattern laminate floor boards are laid because the pattern components are square. So, do whatever makes the most sense to get the rectangular boards into



Homeowners Dallas and Marsha Graham installed tile pattern laminate throughout the first floor, including this bedroom.

You can use conventional woodworking tools on this flooring, although it's a bit hard on the blades.

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place. Orienting the long side of the boards down a hallway, for example, could mean fewer cuts.

Also, read the instructions for your particular product when deciding which direction to work the floor. Many of the non-glue laminate floor systems require a specific order of installation such as left to right and top to bottom.

With wood-grain laminate floor patterns, you can use random lengths to begin and end each row of flooring as long as the seams don't land too close to each other. This is not so with a tile pattern laminate floor. All of the grout lines must line up in both directions just like real tile.

Unlike real tile, however, each of these laminate pieces has multiple printed tiles in the pattern of each board. This adds a little more challenge to the layout, because you have to think in terms of making your cuts and overlaps based on where the printed grout lines fall.

You want to think "brick pattern" to off-set the joints of the boards while thinking "tile pattern" to keep the grout lines in line. This will all make a lot more sense when you open a box of flooring and get started.

Each row steps back one tile so the head seams are offset while keeping the simulated grout lines in line with each other.

LESSONS FROM CERAMIC

Another consideration with a tile pattern versus a wood-grain pattern is how the vertical lines in the layout fit the room. Before laying real ceramic tile it's a good idea to position a row of tiles across the room to see how they will fit. Rarely will full tiles fit the room exactly so you must decide what size of cuts to have on the

REALIGNMENT

You may need to go to the end of a row and shift it back over to re-align the grout pattern.

Locking the head seams together pushed this row of flooring boards under the drywall and misaligned the tile joints in the printed pattern. To fix this, cut out some drywall so you can slip the pull bar over the edge of the board to bring the row back in line. This shifting of the rows to keep the joint patterns in line is a constant challenge of working with tile pattern laminate flooring.

If you really want to get tricky, you can plan the new row to get knocked over a bit at each head joint. Figure about 1/8 inch per joint and start the first board offset a bit to the right. By the time you reach the right end you've gained a little with each board, but you'll still need to make a slight adjustment to get the grout pattern to line up.

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perimeters of the room.

In a room with an open wall on one side and lots of cabinets or furniture on the opposite wall, it may make sense to start with a full tile on the wall that will be seen. In other situations it may be best to split the difference so the tiles are cut about the same on both ends of the room. This can be particularly important when the layout involves a hallway where a thin cut of tile along one wall can look like a fat mistake.

You should also check the room for square, measuring to see if opposite walls are parallel. If you need to make a tapered cut along a particular wall, it's better to do so with the largest tiles possible. In other words, don't leave a thin row of cut

The flooring pieces tip in at an angle until the tongue and groove match up.

Tap the joint together with a hammer and block.

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tiles on a wall that is out of square. The farther you can get the initial grout line from the wall, the better.

If you have a long floor transition between rooms, such as tile-to-carpet, it's best to plan your layout so there are full tiles along that transition. You can either adjust the floor break location, or start the room with a row of cut boards along the wall opposite of the floor break so

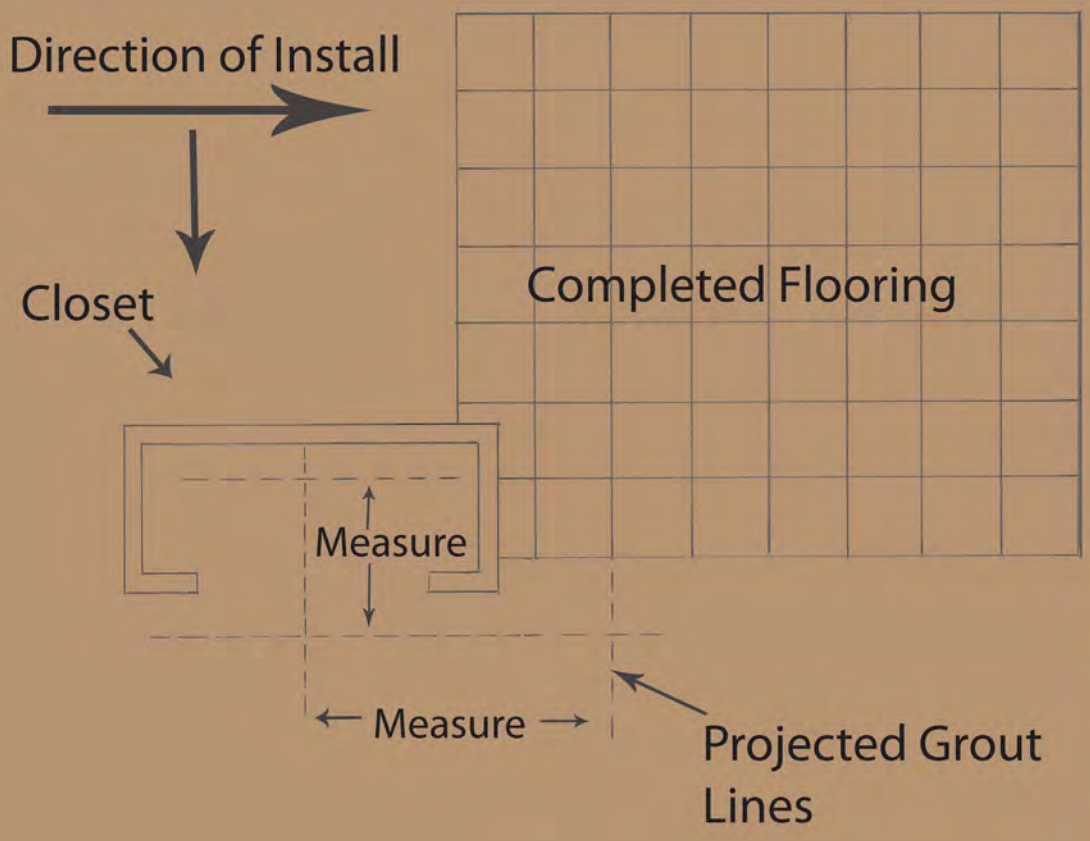
You can usually find someone on the crew who's willing to just stand there and add weight to the flooring so it doesn't move too much when attaching the next piece.

CLOSET CONNECTION

Our project had three closets that had to be installed from the rear of the closet out to join the main room. To accomplish this we projected the grout line grid beyond the leading edge of the flooring in the main room and measured over to the closet area and back into the closet to determine where the grout lines would line up in both directions.

In most cases you will need to cut the back left piece to get the closet started on pattern with the rest of the floor. Additional boards can then be cut to align with the first board in the closet as you work your way out.

If a closet's door opening faces the oncoming material (i.e. the natural flow of the install takes you into a closet), no special provisions will need to be made because of the orientation of the closet.



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SOFTER SOLUTION

the layout works on full tiles.

All of these ceramic tile considerations apply with a tile pattern laminate floor as well, so take your time when deciding where to start that first full piece of material.

LOCK AND LOAD

Of course, once a row gets started it's just a matter of adding full boards until another full one won't fit. Measure the remaining distance to the wall and cut the final piece in the row from the end of the board that matches your snap-together tongue-and-groove pattern. The off-fall from this cut board will probably work (when trimmed to match a grout line on the previous row) on the other side of the room to start a new row.

Again, follow the product's instructions for tipping and locking the pieces into place. Line up a piece to be installed so the head joint just clears, slip the tongue and groove together and put the piece flat on the floor. Use the tapping block to tighten the joint along the long edge of the board. Also, use the tapping block to lock the head joint seam together.

This is where the tile pattern is different from wood-grain patterns. In the process of locking in the head joint, you may shift the rows so the tile joints no longer align. It can help to have someone stand on the adjacent board or place a wedge at the end of the row against the wall.

CUSTOM CUTS

When it's time to make a cut, be sure that you are measuring from a point that corresponds

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  - — pencils
  - — combo square
  - — utility knife
- Safety and comfort gear
  - — safety glasses
  - — ear plugs
  - — knee pads

with an edge on the piece to be cut. Turn the piece to be cut so the tongues and grooves are oriented like the pieces already installed.

Don't be shy about making pencil marks on the flooring. It's easy to clean pencil lines off of the laminate surface so you can mark clearly where you want to begin and end cuts.

Don't try to fit the floor too tightly inside the wall lines. Take advantage of the thickness of the baseboard material. You should have at least 1/4 inch of tolerance all the way around where the edges will be covered by door jambs (in new construction), casing or base.

There is no wait to move onto a no-glue laminate floor. When you're done, it's ready. Oh yeah, there is that install-the-baseboard thing, which will be followed by some spackle, caulk and paint touch-up. Then you'll be ready to move onto your next project. **EHT**

Measure from a point that corresponds with an edge on the piece to be cut. Keep in mind that you will have door jambs, casing and base to cover the gaps to the walls, so don't cut too tightly.

You can run the table saw blade right up to the layout line. We used a jigsaw to finish these notch-type cuts.

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POUR A CONCRETE FLOOR

By Monte Burch

A Guide to Concrete Construction

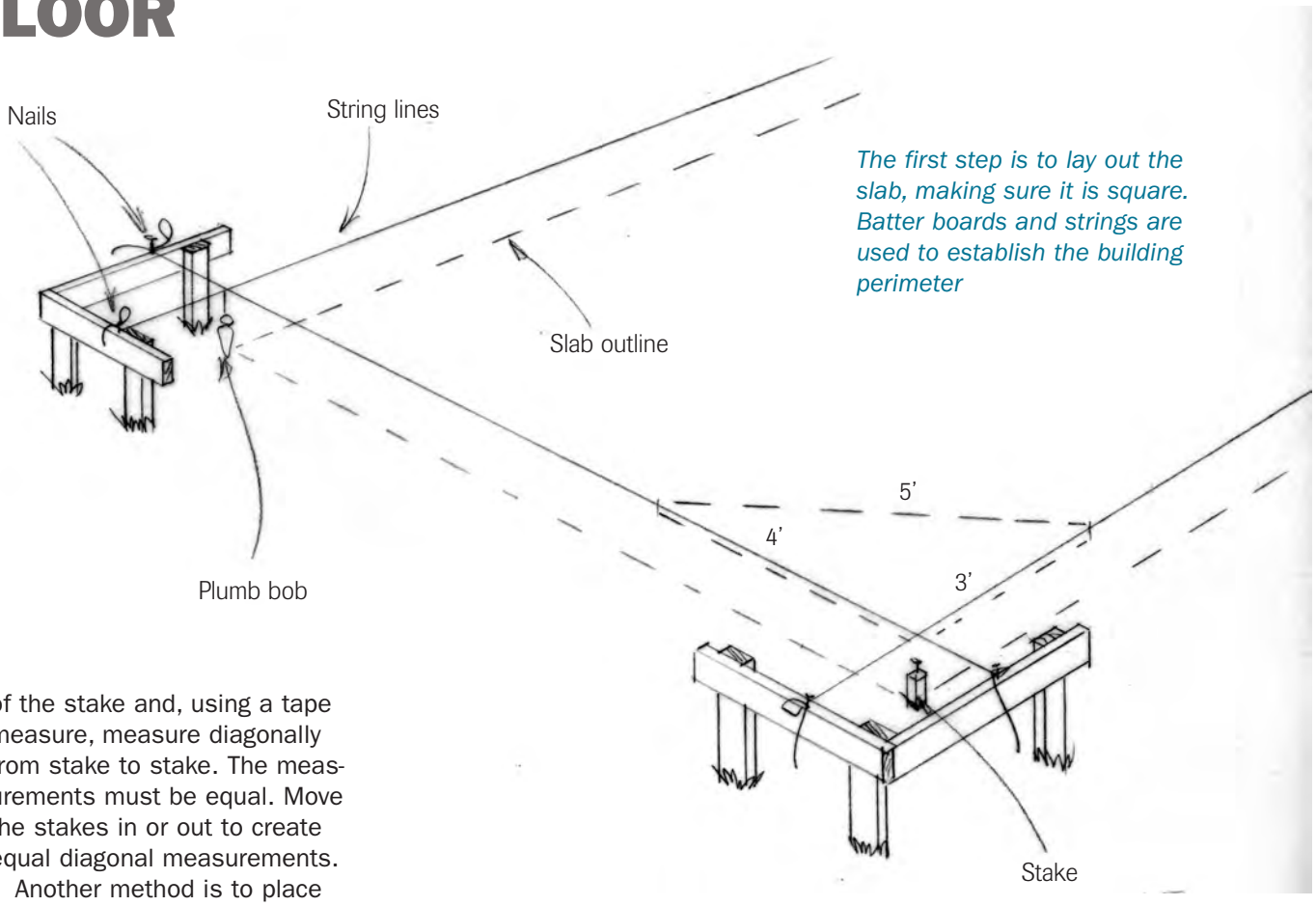
Concrete floors are a major component of many buildings, from homes and garages to shops and sheds. Pouring a concrete floor is hard work, and it takes skill, strength and tools. You may wish to have this job done by a pro, but you can do it yourself. The tools can be rented at many rental places, and the skills are not very difficult to learn. If you're undecided as to whether to do it yourself or have the job done by a professional, the following steps on pouring both a slab or in-foundation floor illustrate the basics and may help you decide.

A concrete slab on which a building is erected is a fairly simple concrete pour, but it takes more work in creating the forms needed to hold the concrete. A pour within a foundation requires little in the way of forming, but in some cases can be a bit more difficult to pour, especially on larger projects. Regardless of the type of pour, or whether you do it yourself or have the job done, the first step is to check with local building codes and regulations, and acquire any permits needed.

CREATING A SLAB

First step is to lay out the slab. Take your time with this step and make sure you get it right. Lay out the slab incorrectly, and the building can be a nightmare. The slab must be square. Mark the outline of the building with stakes at each approximate corner. Drive a nail into the top

POUR A CONCRETE FLOOR



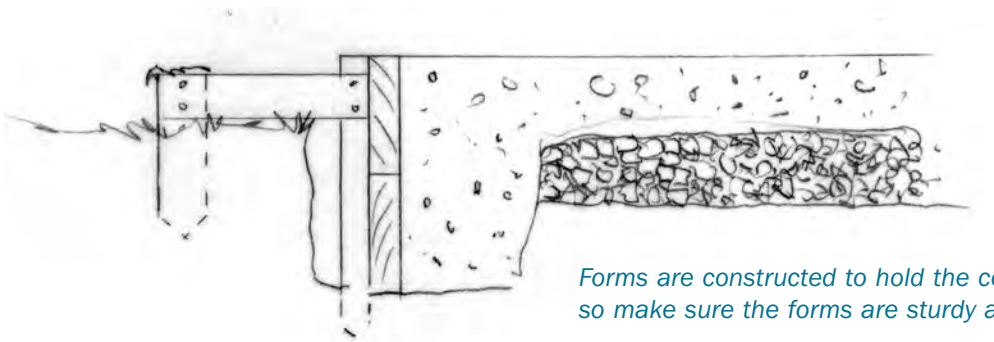
The first step is to lay out the slab, making sure it is square. Batter boards and strings are used to establish the building perimeter

of the stake and, using a tape measure, measure diagonally from stake to stake. The measurements must be equal. Move the stakes in or out to create equal diagonal measurements.

Another method is to place string lines on the nails to mark a rectangular perimeter. Measure and mark 3 feet on one string and 4 feet on the adjoining line. The distance between these two marks should be 5 feet. Again, move in or out as needed.

After the corners are determined and the building laid out square, batter boards are used to create a permanent perimeter mark at all corners. These will stay in place until the forms for the slab have been constructed. Two-by-4 stakes are driven solidly in place and boards nailed to their outer edges. The batter board tops should be level with each other. A string line and string level or laser level can be used to make sure all boards are level with each other. Once the boards are established, a string line is run for all sides of the slab. A plumb bob is used on the intersection of the strings to position their crossing points, or the building corners, directly over the nails on the original stakes.

Mark the outline of the slab with lime, following the string lines. Then dig up the area and remove sod and debris. The area is normally recessed slightly, but the top of the slab must be well above ground level or fill level. In many instances the slab is raised and soil filled in around it



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to create a slope to drain rainwater away from the slab. In some instances local codes may require a footing be poured before the slab. In other cases, a "stiffener" method may be used, digging a deeper area below the frost line around the perimeter of the slab.

The entire area should be well compacted and of a uniform depth. Keep the ground slightly moist as well. The form is then constructed using 2-by-6's. Stakes are driven into the ground on the back (outside) side of the forms every 3 or 4 feet apart to support the form boards. The stakes should be driven or cut off flush with the tops of the form boards. The stakes are fastened to the form boards using duplex nails or nails with double heads so they can be pulled out after the concrete sets. The forms must be level and at the proper grade or height. A carpenter's level can be used for small projects, a string level for longer runs, but a builder's or laser transit is best for larger pours.

A uniform grade is then established using fine gravel 1 to 2 inches deep. The best choice in gravel is called base rock. This has gravel and fine particles that pack down smooth. Once the gravel is in place, tamp it down smoothly.

If the pour is large you will need to divide it into smaller, easily worked sections using interior forms held in place with stakes. Pour one area, remove the forms and stakes and pour the second or third areas.

Floors should be reinforced according to local regulations. In the case shown, wire was used as reinforcement. Rebar may be used for slabs requiring more support. Garage floors are usually poured 4 to 6 inches thick.

You must also install all waste and supply lines for bathrooms, kitchens and so forth, leaving stub pipes. Close these pipes off to make sure nothing gets into them until you're ready to connect them. In many instances you will also wish to install a plastic vapor barrier over the gravel.

DETERMINING THE AMOUNT NEEDED

Concrete for a slab or floor is commonly ready-mixed and delivered in large trucks, although you

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can mix your own for very small jobs. Ready-mix concrete is sold by the cubic yard. To order the correct amount, tell the concrete supplier the width, length and thickness of the slab or floor you intend to pour. They will calculate the quantity needed, and in most instances supply slightly more than needed. You should have a place to dump a small amount of leftover concrete. They will normally add 5 to 10 percent for losses due to uneven subgrade, spillage and so forth.

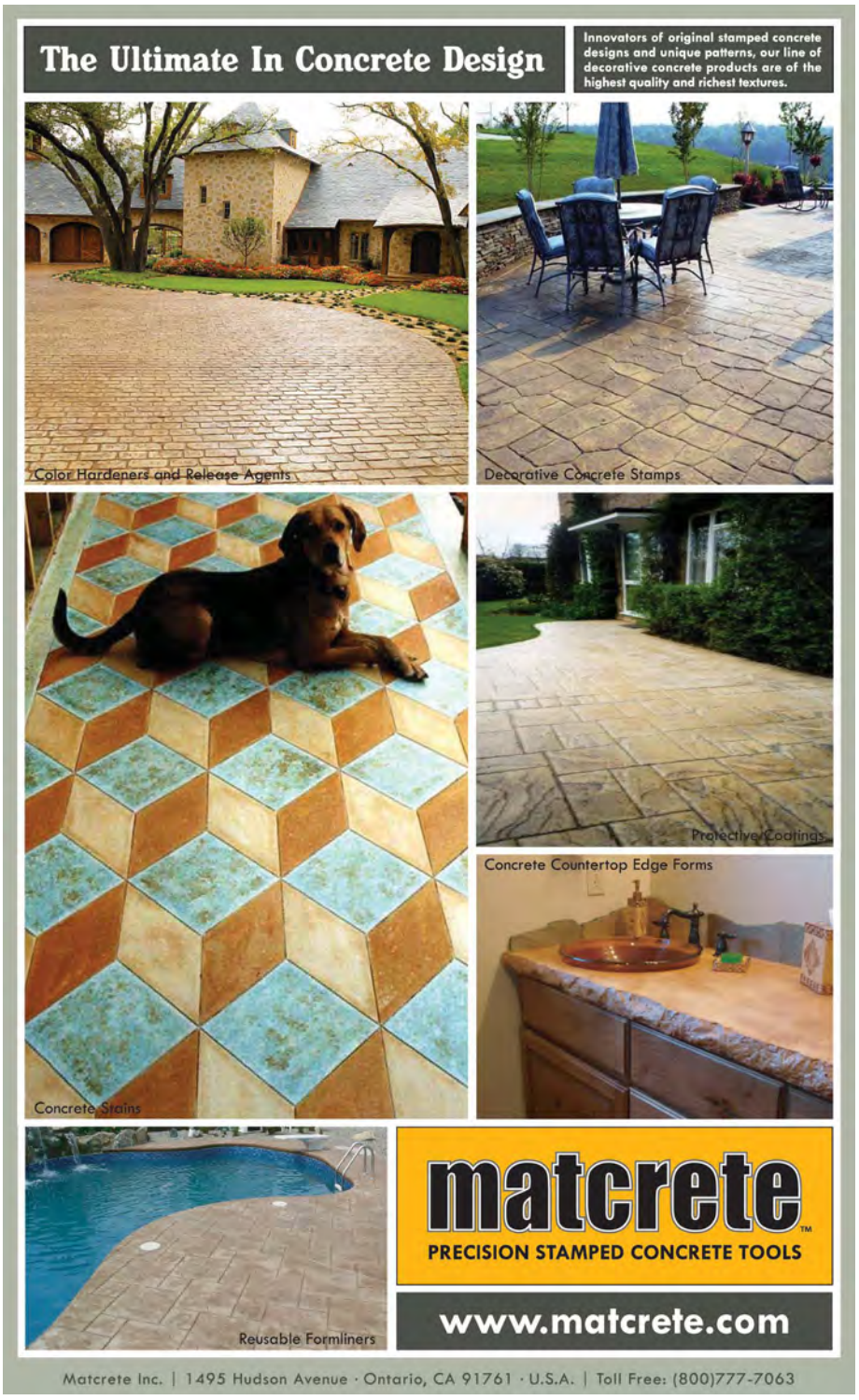
MAKING THE POUR

Concrete should not be poured on extremely hot, dry days as the material will dry out before it can cure properly. Concrete should also not be overworked. If the pour is overworked, too much water will be floated to the surface, which can cause scaling after the concrete dries. The material should be spread evenly and quickly once the pour begins, slightly overfilling the forms.

Pouring a floor—even a small floor—takes manpower. Pour when your best buddies are available and equip them with rubber boots, safety glasses and rakes. Once the pour has started, the liquid material should be evenly spread over the area using the rakes. Make sure all corners are filled. Leave the concrete slightly higher than the top edges of the form boards.

Begin the pour in the back corner of an in-foundation pour. As the liquid material is poured, use rakes to pull the material toward the building opening or door.

The next step is to use a screed board to drag off the excess concrete. The screed board is rested on the form boards and must extend past the form edges at least 3 inches on each side. Screeding is a two-man operation and at best is hard work on a large pour. Beginning on one end of the pour, place the screed board over the form boards with a person on each end of the board. Using a side-to-side motion, and at the same time pulling the board, sweep it across the form boards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Use a screed board to level the concrete between the forms or guide boards.

to the opposite end. Screeding levels the concrete with the tops of the form boards, pulling off excess concrete. Any low spots will be visible and should be immediately filled and the area rescreeded. A jitterbug or tamper should be used to settle the concrete and remove air pockets around the edges.

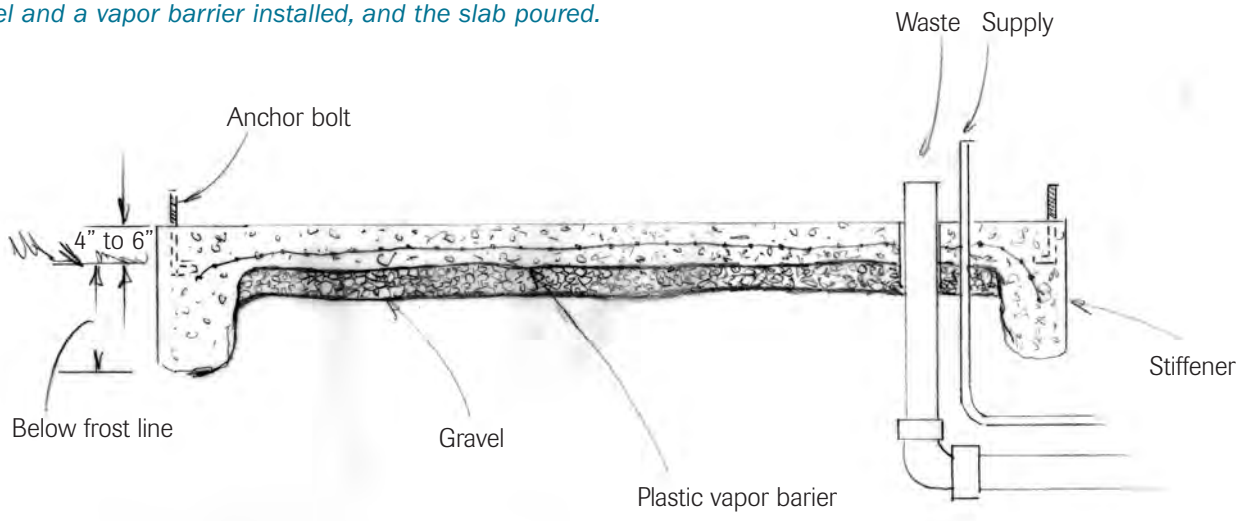
In standard construction, anchor bolts are needed to anchor the walls to the slab. These can be placed in holders nailed to the form edge, or pushed in place as the pour is made. The first method is more precise. The anchor bolts must always fall between the stud locations. If you locate one under a stud, you've got problems.

FLOATING AND EDGING

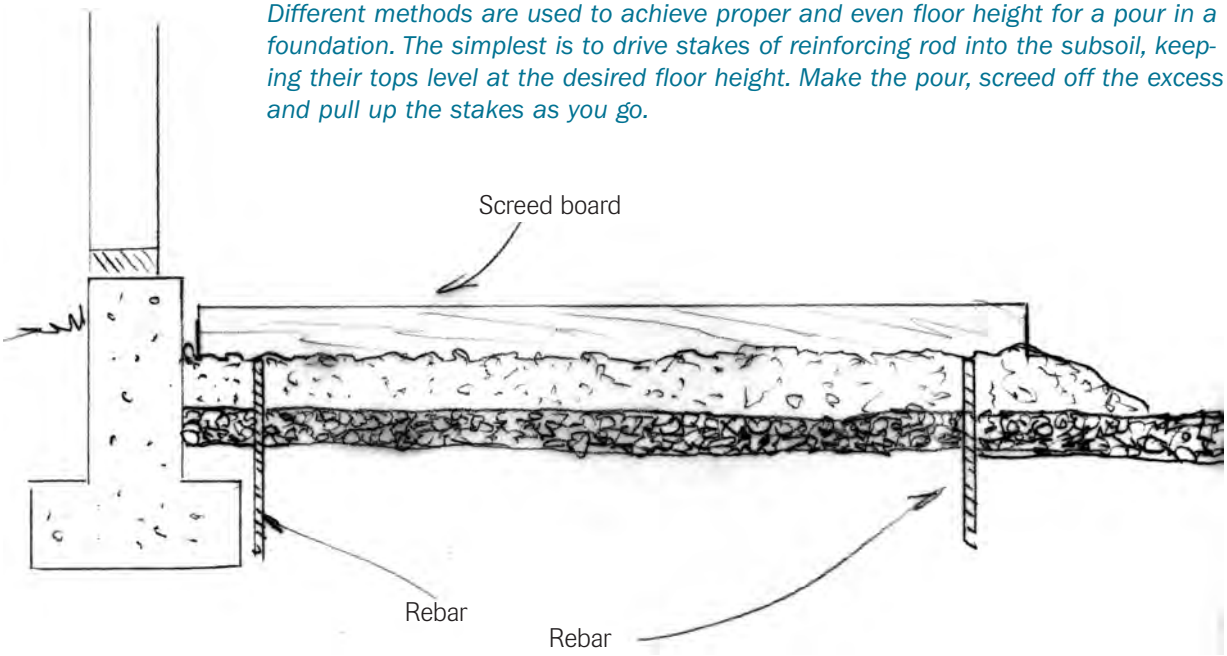
The third step is to float the surface, which will take away some of the roughness. This also helps fill any small voids and works the aggregate slightly below the surface. Do this immediately after screeding. A bull float is used for most floor pours. These are wide magnesium tools with a smooth flat surface, and handle extensions that can be used for a long reach. The float is pushed away from you across the surface with the rear edge slightly raised to prevent the float from digging into the concrete. The float is then pulled back at an almost flat angle. Once the float has been worked across one area, it's moved to the adjoining area, and the steps repeated, slightly overlapping the first area edge. The Marshalltown RotaLeveler bull float bracket allows for easy and automatic changing of the float angle on the push and pull strokes.

The edges around the form boards should be separated using a pointing or margin trowel. Then use an edger around the top edge of the form. This creates a rounded edge that won't chip off when the form is removed. The edger should be held fairly flat, but keep the front tilted up slightly when moving forward and the rear tilted up slightly when moving backward.

All supply and waste lines are stubbed, the subsurface prepared, gravel and a vapor barrier installed, and the slab poured.



Different methods are used to achieve proper and even floor height for a pour in a foundation. The simplest is to drive stakes of reinforcing rod into the subsoil, keeping their tops level at the desired floor height. Make the pour, screed off the excess and pull up the stakes as you go.



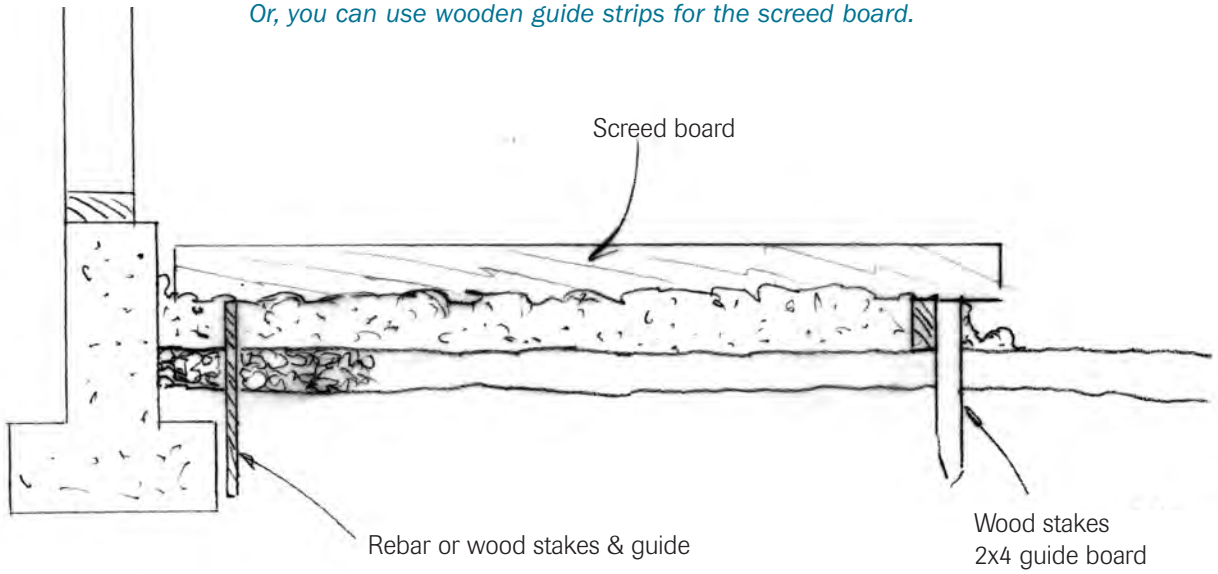
TROWELING

The final finishing is troweling to smooth the concrete. Troweling provides a smooth, hard and slick surface, with the amount of smoothness depending on the amount of troweling, as well as the timing. Again, it's easy to overwork an area. Small jobs can be hand troweled using a 14-by-4- or 16-by-4-inch finish trowel. It does take some skill to hand trowel a surface, especially a larger area. Troweling should begin when the sheen of water disappears and a footprint leaves less than 1/4 inch of depression. Several trowelings will result in a smoother, hard surface.

The first troweling is done with the blade held down flat on the surface. Use the trowel in an arc, overlapping each previous arc by about one-half inch. Allow the concrete to set slightly between trowelings. The final troweling should be done more vigorously and with the trowel tilted up slightly, pressing down with the edge. Concrete can set up quicker than you can hand trowel, so if you're hand troweling, you may wish to enlist a buddy to help. A power trowel, available at most tool rentals, is the best choice for large slabs. In most instances floors are left hard and smoothed, not broomed, although you may prefer a light brooming in sheds and garages.

Keep the concrete damp for five to seven days after pouring. Do not allow it to dry out. Cover it with plastic sheeting and dampen down the surface every day or so.

Or, you can use wooden guide strips for the screed board.



For an inside pour, prepare the floor with gravel, guide stakes or boards, a vapor barrier and any necessary reinforcement required by code. In the project shown, wire was used.

POURING AN INSIDE FLOOR

Making a pour inside an existing foundation or walls is easier in some ways, because you don't have to create the form, except to block off doorways. In other instances it's a bit harder, because you may have to drag the materials further during the screeding process, say from the back of the building to the openings.

The subsoil surface should be prepared in the same manner as for a slab. In the instance of a floor inside a building that requires a drain pipe or sump-pump location, the drain pipe and drain must be installed and formed first as a separate pour. The floor must also be pitched to the drain in all directions, normally 1/8-inch to the foot.

Several methods can be used to establish the height and level surface of the pour. On small pours,

such as a shed or single-car garage, experts often simply use 1/2-inch reinforcing rod cut into 2-foot lengths. These are spray-painted a bright fluorescent orange and driven into the subsoil at 3-foot intervals around the perimeter of the building and down through the center. The liquid concrete is poured to the approximate height of the rods, then screeded, pulling up rods as you screed past them. Using this method you can screed one side at a time as you make the pour, or screed one side, then go back, fill and screed the opposite side, but still making only one pour.

An alternative method, especially when using a vapor barrier, is to install screed guide boards on wooden stakes driven into the subsoil. The guide boards are created level or sloped to create the pitch desired. When making the pour, begin at the rear of the building and screed toward the

A bull float is used to smooth the concrete and settle the aggregate below the surface. Push the float across the surface to the back of the pour with the back of the float tilted up slightly.

Then pull the float back across the surface with the float flat on the surface. Repeat, overlapping the strokes.

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POUR A CONCRETE FLOOR

Edge around any openings or forms. The final step is to trowel the surface. On large pours, the best bet is to rent a power trowel.

door or openings, removing the guideboards and stakes as you go.

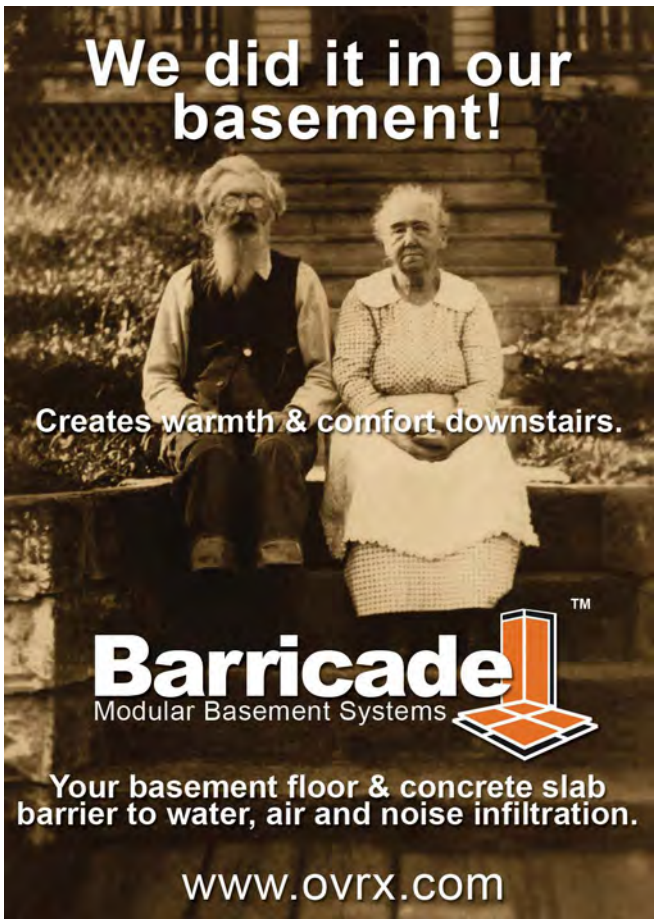
Another method is to use 4-by-4's as guide boards. Make sure the subsoil surface is flat, smooth and level (or at the correct pitch) and lay 4-by-4's on the vapor barrier. Make the pour, again starting at the back and working toward the door, removing the 4-by-4's as you go. Some like to leave the guideboards in place until the concrete just begins to set, then walk across it, remove the boards and fill in the spaces with fresh concrete. But this requires having enough fresh concrete on hand to fill in.

If the pour is fairly large, say a two-car garage, another method is to create three separate pours. Divide the building into thirds lengthwise and install guide boards on stakes. Make a side pour, make the opposite side pour, then remove the guide boards and make the center pour.

Wet down the foundation before starting the pour and be careful not to splash concrete up on the walls of the building during the pour. When you reach the door forming, smooth the opening edge with an edger and remove the form board. **EHT**

TIPS & TRICKS

If making small pours, say for a shed, and mixing your own, a Crete Sheet, the world's simplest concrete mixer, can be used to mix pre-mixed concrete. It easily and quickly mixes an entire 80-pound bag per use, but is a two-man operation. Fore more information, visit www.cretesheet.com.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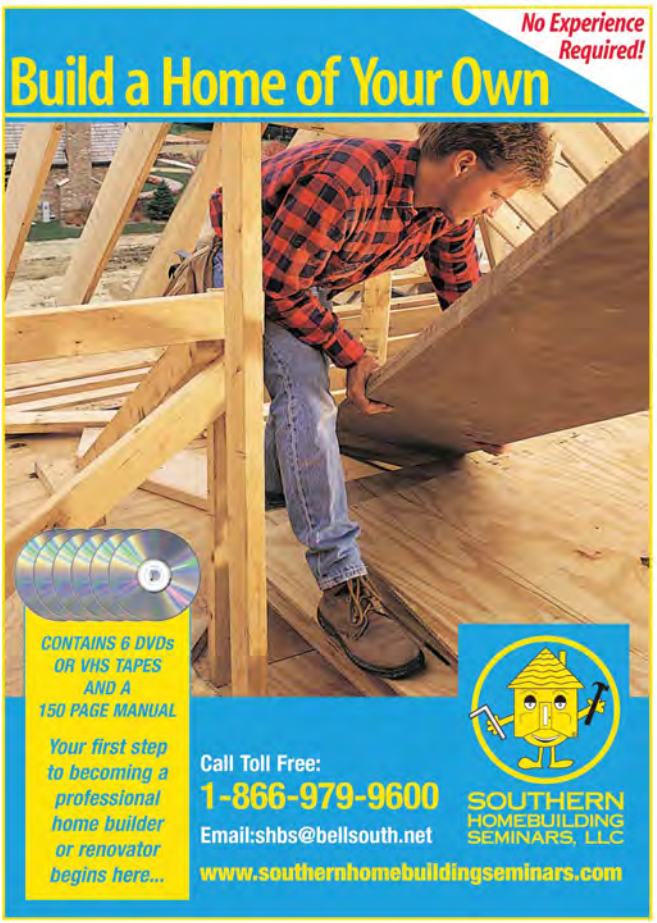
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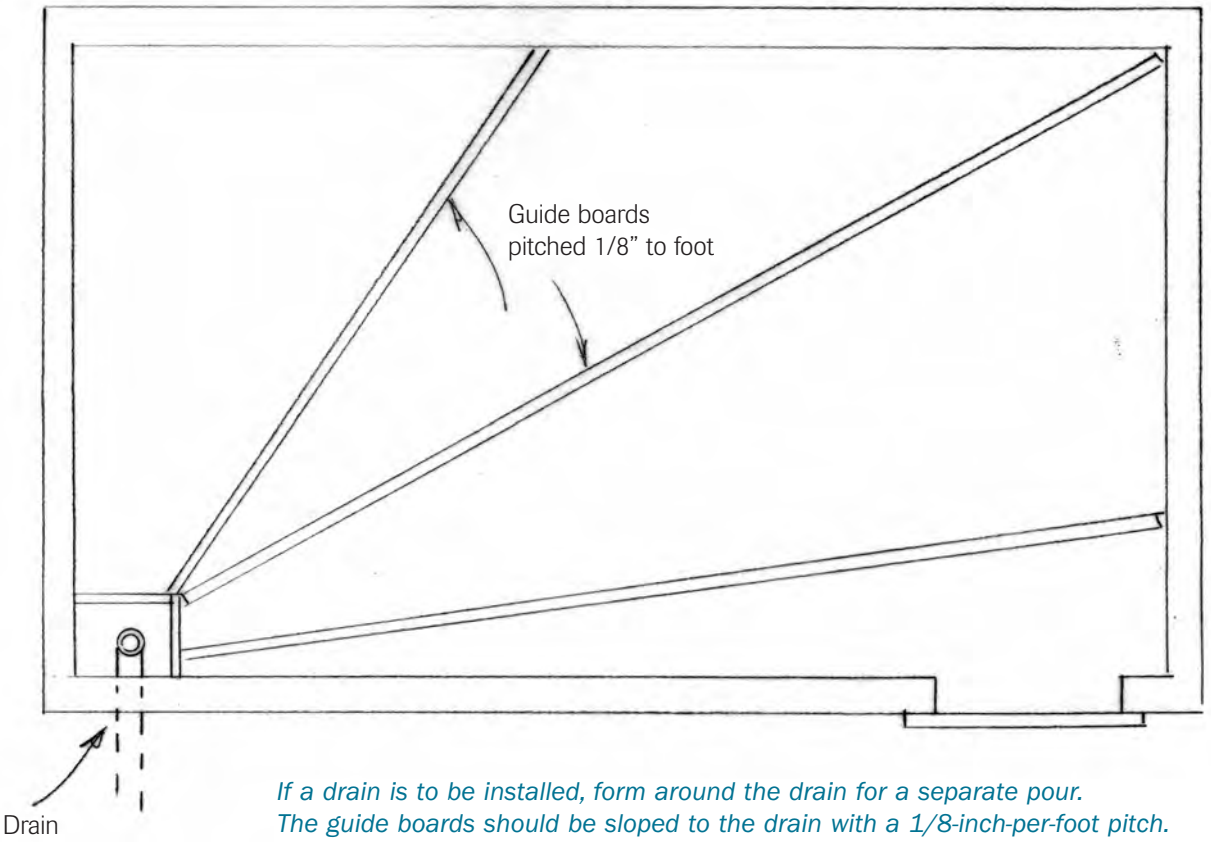

If a drain is to be installed, form around the drain for a separate pour. The guide boards should be sloped to the drain with a 1/8-inch-per-foot pitch.

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Rock Hard Art

Creating Concrete Sculpture

By Matt Weber

T.J. Neil is a concrete craftsman who has taken his work to a new level of artistry. When many people think of concrete, they may envision a dull, lifeless sidewalk slab, but Neil sees the potential for a soaring eagle, a roaring bear, or even a 65-foot long dinosaur. Extreme How-To spoke with Neil about his forays into concrete sculpture, some basic techniques, and where he's headed today.

"The first statue I made was a wishing well for my father," explains Neil. "Someone bought the well right off his lawn, so I thought there might be a few dollars in these concrete sculptures, and maybe I should sell them myself."

A friend of Neil's, who owned the Aqua Circus in Cape Cod, Florida, convinced him to create a concrete dolphin as a mascot. As he was building the dolphin, a local radio station covered the story and referred to Neil as a "sculptor." The term stuck. The next thing he knew, the dolphin was featured on the front page of the newspaper, which sparked a great deal of interest in his concrete craft.

"These days, the power of the internet has really exposed my work to a lot of new people," says Neil, who owns a website exhibiting his work at www.tjneil.com. "I get worldwide publicity, and that otherwise would be impossible." In fact, Neil has recently authored a book, titled *Making Concrete Sculpture*, in which he shares his techniques for creating concrete works of art. The book is chock full of in-progress photos of sculptures ranging from fishermen, alligators, whales, sharks, horses, panthers, elephants, dragons and more.

SCULPTING BASICS

According to Neil, anyone can become a concrete sculptor, as long as they're willing to practice, experiment and be creative. The overall design comes straight from the creator's imagination, and a detailed sketch is the blueprint where Neil begins.

Of course, some basic engineering skills do apply. The process begins with an armature of rebar rods covered with galvanized lath wire. This serves as the skeleton of the structure. The wire mesh is secured to the rebar with black tie wire. Before building, Neil cuts hundreds of 8-inch pieces of black tie wire and keeps them in a coffee can. Every 3 inches on the armature, he bends the wires into an S, hooks them through the lath and around the rods, and twists them tightly.

Neil leaves strategic openings in the lath wire so he can add concrete. The base of each structure is poured solid with 8 to 18 inches of concrete, depending on its size. The larger the statue, the heavier the base. The rebar is housed in this concrete base, extending upward to be bent into the appropriate shape for the armature. This solid base is

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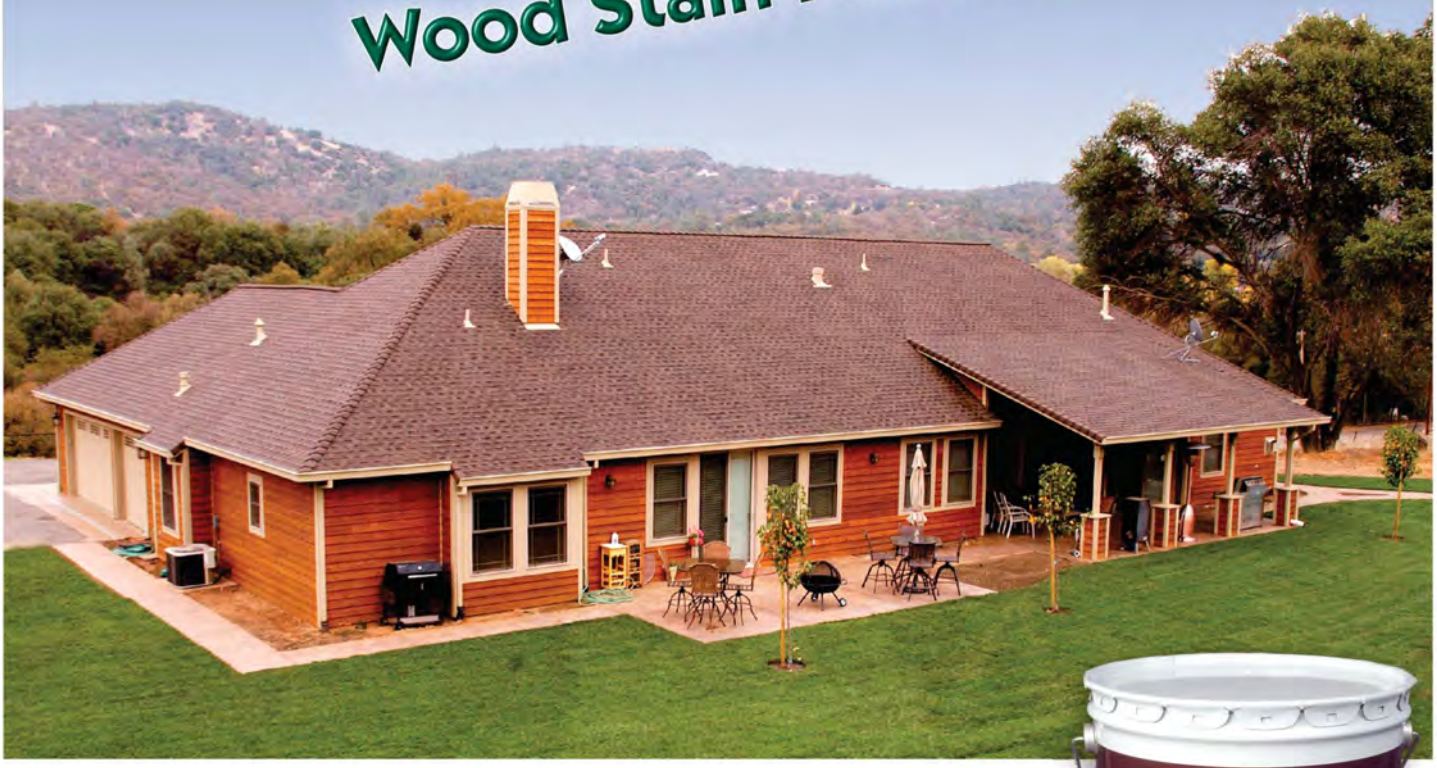

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crucial for the strength of the structure, which is especially important if shipping the finished piece.

Much of the upper portions of Neil's statues are hollow, but even the hollow areas have 2 to 3 inches of concrete over the lath wire. However, even in the upper portions, strategic load-bearing areas, such as the shoulder joints of arms, may be solid concrete for extra structural integrity.

When sculpting, Neil holds the concrete material with a masonry hawk and applies it in successive coats over the wire with a variety of concrete trowels (point trowel, margin trowel, plastering trowel, etc.). As the coats begin to stiffen, each layer is scratched over the entire surface (Neil uses scrap lath wire to do this). This scratching process roughens the surface so the next coat of concrete has a strong bond with the coat beneath it. Neil also stresses the importance of allowing each coat of concrete, applied about 3/4-inch per coat, to fully cure before the next layer is applied.

Shown here is an early stage of the concrete eagle's armature.

"Let each layer cure for seven days," says Neil. "Then put on another coat and let that one cure for seven days, too. Then apply another inch for detail and let that cure. Do this and you will have a very strong concrete structure." Neil notes that concrete

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can absorb water up to 1-1/2 inches below its surface. This is why the statues require such thick coats of appropriately cured concrete—to protect the armature. If the interior rebar is exposed to moisture it can rust, and when it rusts, it expands, which can in turn crack the surrounding concrete. This is also why Neil suggests sealing and/or painting the sculptures with the highest quality exterior latex paint you can find.

"When painting, you first need to apply a base coat," suggests Neil. "I put on a coat of plain white or gray to serve as a primer so the next coats will have a strong bond. When painting under the hot sun, you may need to thin the paint a little with water so the paint has time to soak into the concrete before it dries." Neil mixes his paint right on the concrete structure, blending the colors for his preferred hue.

RECIPE FOR SUCCESS

When it comes to the recipe for concrete, Neil suggests using large gravel in the base of the structure to give it strength. Medium gravel is used for the center of the structure. Small pea gravel is used in structural areas such as arms or legs.

For the non-structural areas, such as the finish coats, Neil uses a sand mix. He suggests coarse sand for the base coat, then medium-grade sand, followed with a fine sand mix for the finish coat. Neil prefers to mix his own concrete from sand,

T.J. Neil applies concrete to his sculpture, "Freedom's Flight."

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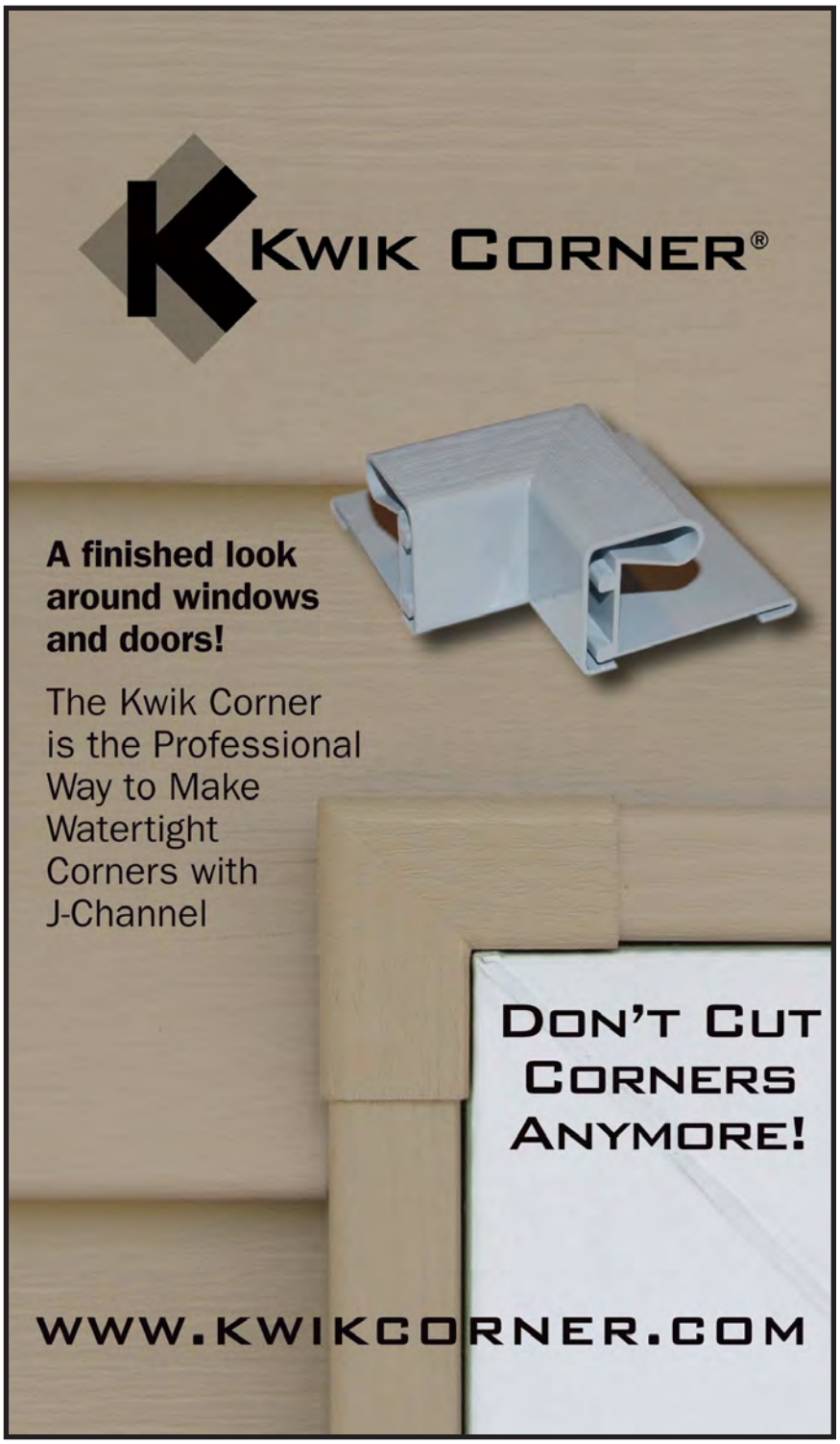
gravel and Portland cement. But for a novice sculptor, he suggests that bags of premixed concrete available at most home stores would be a good place to start.

WHAT'S NEXT?

As it turns out, this was an ideal time for the *EHT* staff to get to know T.J. Neil, because our hometown is about to become the proud exhibitor of a Neil original. Our magazine is headquartered in Birmingham, Alabama, home to University of Alabama at Birmingham. The local university's mascot is "Blaze" of the UAB Blazers, which is pictured on countless t-shirts and baseballs caps as a fire-breathing dragon. Neil has recently been commissioned to construct the dragon from concrete, which will be placed in front of the university arena as a new landmark. The sculpture is scheduled for delivery in April 2008.

"This dragon will be about 10 feet tall and weigh 3 tons," says Neil. "The dragon is supposed to breathe fire, so we're building a smoke machine inside the statue to make the mouth look like it's smoldering."

Check for updates of the Blazer dragon and other future sculptures at www.tjneil.com. **EHT**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Neil at work on the Blazer dragon

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Home Stretch

Making Room for Wider Tires

By Tim Walton, Photos by Larry Walton

Race day was fast approaching and the used set of race tires and wheels I had just bought needed a little extra clearance, especially for making autocross maneuvers. Fortunately, one of my friends had just the solution: the Eastwood Fender Roller.

Most stock car wheel fitment and tire sizes are on the conservative side, so the addition of wider tires can provide a handling and traction advantage. Depending on how aggressive the tire size and wheel offset (the distance between the inside rim of the wheel and the bolting surface), some massaging of the stock fenders may be needed to gain some extra clearance.

Fender clearance can be gained in stages starting with removing the fender liners. Next comes rolling the fenders—that is flattening the L-shaped lip of the inside of the fender opening, which also gets the sharp metal edge away from the tires. This is a good idea in case fender and tire do meet at some point. Some guys go beyond flattening the lip to slightly flaring the fenders.

Previously, we fitted our Impreza with some coilovers, allowing for adjustable ride height and a stiffer ride for reduced body roll. Because the coilovers are thinner than the stock struts, they also provided additional clearance along the inside edge of the tire for deeper off-set wheels.

The addition of Kuhmo Victoracer R Compound tires had us looking for clearance for the outside of the tires, and rolling the fenders was a good option. However, if you are an autocrosser, you probably already know that changes in tire size and type as well as fender modifications may put your car in a different class. Check your local rule book.

The Eastwood Fender Roller, a popular tool with performance car enthusiasts, can be purchased or rented online if you can't find one for rent in your area. Because of the risk of potential paint cracking and the associated repair, many shops won't roll the fenders for you, which makes it an ideal do-it-yourself project. With the right tools, preparation and time, fender rolling can give you the extra clearance you need for some serious rubber.

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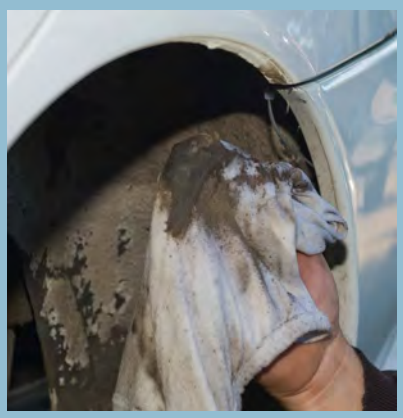
STEP-BY-STEP

Step 1: Break the lug nuts free before jacking the vehicle off the ground.

Step 2: Check the owner's manual for floor jack placement to prevent damage to the vehicle. Jack it up until the tires clear the ground.

Step 3: Properly support the vehicle using jack stands (once again referencing the owner's manual for locations) and remove the wheels.

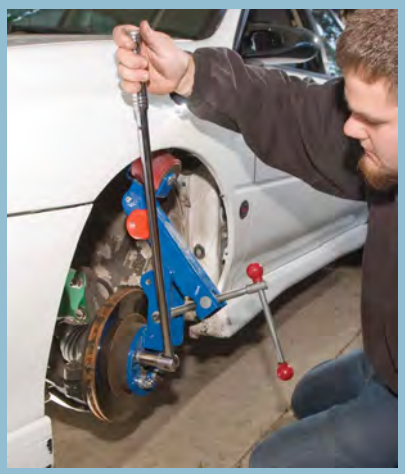
Step 4: Remove the stock fender liners or rubber trim strips.



Step 5: Clean the inner lip of the fender to ensure you're not pressing rocks and dirt into the lip you're rolling.

Step 6: Adjust the fender roller for clearance to the fender and line it up with the lugs for mounting.

Step 7: Using the supplied washers, attach the fender roller tool using the vehicle lug nuts.



Step 8: Snug down the lugs to hold it in place—but do not over tighten, which can bend the tool.

Step 9: Align the center of the roller with the inner fender lip.

Step 10: Adjust the angle of the roller head so it will start to bend the fender lip upward.

Step 11: Heat the inside and outside of the fender to help prevent paint cracking.

Step 12: Constantly monitor the surface temperature of the areas being worked. We used an infrared temp gun and were aiming for 135 degrees. These temperatures may seem extreme, but imagine the heat paint is exposed to on a hot 100+ degree day.

Step 13: Slowly apply pressure using the fender roller tool. Make gradual adjustments to increase the reach of the tool. Rolling smaller sections of the fender will apply less pressure to the paint than trying to do a full 180-degree arch.

Step 14: Apply a little more force; working slowly and ensuring the temperature of the paint and metal remain consistent. Check tire clearance if you're working towards a specific application: in our case, some Kuhmo Victoracer tires for autocross.

After installing the wheels and tires, use a torque wrench to tighten your lug nuts to proper manufacturer specifications. Lower the car just enough so the tires don't spin during torquing.

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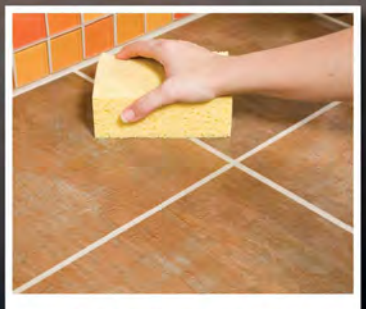

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